

#11

## SEQUENCE LISTING



<110> May, Gregory D.  
 Clendennen, Stephanie K.  
 Mason, Hugh S.  
 Lim, Miguel A. Gomez  
 Arntzen, Charles J.

<120> DNA Regulatory Elements Associated with Fruit Development

<130> 031998-007

<140> US 09/892,635

<141> 2001-06-28

<150> US 09/160,351

<151> 1998-09-25

<150> US 60/060,062

<151> 1997-09-25

<160> 45

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 1186

<212> DNA

<213> Musa acuminata

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gcg ctc acg gga aga ctg cag gcc cgg cgc agc tca tgc att ggc gtc 153  
 Ala Leu Thr Gly Arg Leu Gln Ala Arg Arg Ser Ser Cys Ile Gly Val  
 20 25 30

tac tgg gga caa aac acc gac gag gga agc tta gca gat gct tgt gcc 201  
 Tyr Trp Gly Gln Asn Thr Asp Glu Gly Ser Leu Ala Asp Ala Cys Ala  
 35 40 45

aca ggc aac tac gaa tac gtg aac atc gcc acc ctt ttc aag ttt ggc 249  
 Thr Gly Asn Tyr Glu Tyr Val Asn Ile Ala Thr Leu Phe Lys Phe Gly  
 50 55 60 65

atg ggc caa act cca gag atc aac ctc gcc ggc cac tgt gac cct cgg 297  
 Met Gly Gln Thr Pro Glu Ile Asn Leu Ala Gly His Cys Asp Pro Arg  
 70 75 80

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Asn Asn Gly Cys Ala Arg Leu Ser Ser Glu Ile Gln Ser Cys Gln Glu
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cgt ggc gtc aag gtg atg ctc tcc atc gga ggt ggc ggg tct tat ggc 393
Arg Gly Val Lys Val Met Leu Ser Ile Gly Gly Gly Gly Ser Tyr Gly
      100                      105                      110

ctg agt tcc acc gaa gac gcc aag gac gta gcg tca tac ctc tgg cac 441
Leu Ser Ser Thr Glu Asp Ala Lys Asp Val Ala Ser Tyr Leu Trp His
      115                      120                      125

agt ttc ttg ggt ggt tct gct gct cgc tac tcg aga ccc ctc ggg gat 489
Ser Phe Leu Gly Gly Ser Ala Ala Arg Tyr Ser Arg Pro Leu Gly Asp
      130                      135                      140                      145

gcg gtt ctg gat ggc ata gac ttc aac atc gcc gga ggg agc aca gaa 537
Ala Val Leu Asp Gly Ile Asp Phe Asn Ile Ala Gly Gly Ser Thr Glu
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cac tat gat gaa ctt gcc gct ttc ctc aag gcc tac aac gag cag gag 585
His Tyr Asp Glu Leu Ala Ala Phe Leu Lys Ala Tyr Asn Glu Gln Glu
      165                      170                      175

gcc gga acg aag aaa gtt cac ttg agt gct cgt ccg cag tgt cct ttc 633
Ala Gly Thr Lys Lys Val His Leu Ser Ala Arg Pro Gln Cys Pro Phe
      180                      185                      190

ccg gat tac tgg ctt ggc aac gca ctc aga aca gat ctc ttc gac ttc 681
Pro Asp Tyr Trp Leu Gly Asn Ala Leu Arg Thr Asp Leu Phe Asp Phe
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gtg tgg gtg cag ttc ttc aac aac cct tcg tgc cat ttc tcc cag aac 729
Val Trp Val Gln Phe Phe Asn Asn Pro Ser Cys His Phe Ser Gln Asn
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Ala Ile Asn Leu Ala Asn Ala Phe Asn Asn Trp Val Met Ser Ile Pro
      230                      235                      240

gcg caa aag ctg ttc ctt ggg ctt cct gct gct cct gag gct gct cca 825
Ala Gln Lys Leu Phe Leu Gly Leu Pro Ala Ala Pro Glu Ala Ala Pro
      245                      250                      255

act ggt ggc tac att cca ccc cat gat ctc ata tct aaa gtt ctt ccg 873
Thr Gly Gly Tyr Ile Pro Pro His Asp Leu Ile Ser Lys Val Leu Pro
      260                      265                      270

atc cta aag gat tcc gac aag tac gca gga atc atg ctg tgg act aga 921
Ile Leu Lys Asp Ser Asp Lys Tyr Ala Gly Ile Met Leu Trp Thr Arg
      275                      280                      285

tac cac gac aga aac tcc ggc tac agt tct caa gtc aag tcc cac gtg 969
Tyr His Asp Arg Asn Ser Gly Tyr Ser Ser Gln Val Lys Ser His Val
      290                      295                      300                      305

tgt cca gcg cgt cgg ttc tcc aac atc tta tct atg ccg gtg aag tct 1017
Cys Pro Ala Arg Arg Phe Ser Asn Ile Leu Ser Met Pro Val Lys Ser

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310

315

320

tcc aag taa acctgaacgg cgtagatgat cgggtggtcga aaactccgat  
 Ser Lys \*

1066

catcatgggt ccccatccgt atccgtgcgt tgctacgtta tgggtgtttcc cttgtatgtt 1126  
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&lt;210&gt; 2

&lt;211&gt; 323

&lt;212&gt; PRT

&lt;213&gt; Musa acuminata

&lt;400&gt; 2

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Glu	Arg	Gly	Val	Lys	Val	Met	Leu	Ser	Ile	Gly	Gly	Gly	Gly	Ser
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His	Ser	Phe	Leu	Gly	Gly	Ser	Ala	Ala	Arg	Tyr	Ser	Arg	Pro	Leu
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Asp	Ala	Val	Leu	Asp	Gly	Ile	Asp	Phe	Asn	Ile	Ala	Gly	Gly	Ser
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Glu	Ala	Gly	Thr	Lys	Lys	Val	His	Leu	Ser	Ala	Arg	Pro	Gln	Cys
			180					185					190	Pro
Phe	Pro	Asp	Tyr	Trp	Leu	Gly	Asn	Ala	Leu	Arg	Thr	Asp	Leu	Phe
		195					200					205		Asp
Phe	Val	Trp	Val	Gln	Phe	Phe	Asn	Asn	Pro	Ser	Cys	His	Phe	Ser
	210					215					220			Gln
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225					230					235				Ile
Pro	Ala	Gln	Lys	Leu	Phe	Leu	Gly	Leu	Pro	Ala	Ala	Pro	Glu	Ala
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Pro	Thr	Gly	Gly	Tyr	Ile	Pro	Pro	His	Asp	Leu	Ile	Ser	Lys	Val
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Arg	Tyr	His	Asp	Arg	Asn	Ser	Gly	Tyr	Ser	Ser	Gln	Val	Lys	Ser
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Ser	Ser	Lys												

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 Val Tyr Trp Gly Gln Asn Thr Asp Glu Gly Ser Leu Ser Asp Lys Tyr  
 35 40 45  
 Ala Gly Ile Met Leu Trp Thr Arg Tyr His Asp Arg Asn Ser Gly Tyr  
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 20 25 30  
 Asn Gly Asn Glu Gly Ser Leu Ser Pro Lys Tyr Gly Gly Val Met Ile  
 35 40 45  
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 Gly Ser Val  
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 Gly Gln Asn Gly Asn Glu Gly Thr Leu Ser Pro Lys Tyr Gly Gly Val  
 35 40 45  
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<213> Musa acuminata

<400> 6

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Tyr Gly Gly Val Met Ile Trp Ser Lys Phe Trp Asp Asp Lys Asn Gly
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<210> 7

<211> 64

<212> PRT

<213> Musa acuminata

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           20           25           30
Gly Asn Glu Gly Asn Leu Ser Pro Lys Tyr Gly Gly Val Met Ile Trp
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<210> 8

<211> 67

<212> PRT

<213> Musa acuminata

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           20           25           30
Gly Gln Asn Gly Asn Glu Gly Asn Leu Ser Ala Lys Tyr Gly Gly Val
           35           40           45
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Ala Ser Val
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<212> DNA

<213> Musa acuminata

<220>

<221> misc\_feature

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 tatcagtggtg tcatgatgtc agatgggata gggttgtgtc taccttgtct acatctgtac 360  
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 Asn  
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 <212> PRT  
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 35 40 45  
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 50 55 60  
 Gly Asn Gln  
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 50 55 60

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<211> 3559

<212> DNA

<213> Musa acuminata

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<223> Complement

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&lt;210&gt; 18

&lt;211&gt; 3559

&lt;212&gt; DNA

&lt;213&gt; Musa acuminata

&lt;400&gt; 18

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cttgtaacct gacgtcctt 3559

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&lt;210&gt; 19

&lt;211&gt; 1131

&lt;212&gt; PRT

&lt;213&gt; Musa acuminata

&lt;400&gt; 19

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Gln Glu Phe Asn Leu Phe Phe Phe Ile Leu Leu Ile Lys Leu Asn Phe
20          25          30
Phe Ile Val Trp Tyr Leu Ala His Ser Arg Thr Pro Leu Phe Leu Glu
35          40          45
Ile Glu Tyr Lys Ile Leu Leu Pro Ser Lys Val Ile Leu Ile Leu Lys

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50	55	60													
Ile	Ile	Trp	Leu	Thr	Tyr	Lys	Ala	Asn	Met	Ser	Lys	Val	Val	Phe	Thr
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Val	His	Thr	Ile	Glu	Thr	Thr	Lys	Gly	Asn	Ile	Cys	Ser	Val	Ile	Thr
				85					90					95	
Lys	His	Asn	Thr	Lys	Ile	Phe	Thr	Ser	Asn	Pro	His	Tyr	Lys	Ser	Phe
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Lys	Leu	Gln	Leu	Thr	Met	Arg	Phe	Ser	Leu	Pro	Ala	Thr	Phe	Phe	Ser
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Glu	His	Lys	Asp	Leu	Pro	Gln	Pro	Leu	Thr	Phe	Asn	Ile	Ser	Gly	Leu
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Trp	Thr	Arg	Phe	Leu	Leu	His	Ala	Lys	Ile	Arg	Thr	Lys	Ile	Arg	Ser
145					150					155				160	
Ser	Tyr	Ile	Arg	Asn	Asp	Pro	Asn	Arg	Phe	Glu	Tyr	Ser	Pro	Leu	Gly
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Ile	Asn	Lys	Ile	Asn	Lys	Val	Gly	Ile	Ser	Tyr	Phe	Arg	Lys	Ser	Phe
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Glu	Ser	His	Leu	Ser	His	Leu	Phe	Leu	Ile	Lys	Asn	Asn	Asn	Asn	
		195						200			205				
Leu	Ile	Asn	Leu	Ile	Gly	Lys	Lys	Lys	Ser	Ser	Leu	Ala	Ile	Lys	Val
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Trp	Asp	Ile	Glu	Ile	Asn	Glu	Leu	Asn	Cys	Asn	His	Lys	Val	Glu	Phe
225					230					235				240	
Leu	Asn	Thr	Cys	Thr	Gly	Lys	Leu	Ile	Cys	Ser	His	Val	Ser	Met	Gln
			245						250					255	
Gln	Phe	Thr	Ala	Trp	Cys	Asp	Phe	His	Asn	Tyr	Arg	Leu	Ile	Pro	Trp
			260					265					270		
Glu	Ser	Arg	Ile	Lys	Arg	Val	Ser	Asn	Ile	Leu	Pro	Ser	Thr	Met	Met
		275					280					285			
Ala	Val	Arg	Cys	Val	Ser	Thr	Pro	Asn	Phe	Pro	Ser	Met	Trp	Asn	Trp
	290					295					300				
Lys	Ser	Ser	Arg	Thr	Asp	Gly	Pro	Thr	Arg	Phe	Val	Gln	Ser	Gly	Asp
305					310					315				320	
Tyr	Cys	Ala	Glu	Asn	Gly	Trp	Gln	Val	Ala	Asn	Val	Pro	Asp	Leu	Ile
				325					330					335	
Leu	Lys	Thr	Val	Asp	Met	His	Ala	Leu	Ile	Thr	Ser	Leu	Pro	Ser	Leu
			340					345					350		
Thr	Leu	Leu	Ile	Asp	Ala	Ser	Ser	Leu	Gly	Gln	Gly	His	Val	Met	Thr
		355					360					365			
Arg	Ile	Tyr	Ser	Thr	Ile	Cys	Asp	Pro	Tyr	Ser	Lys	Trp	Asn	Lys	Thr
	370				375						380				
Ser	Lys	Ser	Ser	Ser	Arg	Ile	Leu	Glu	Gly	Ile	Arg	Met	Val	Gly	Arg
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Lys	Asn	Lys	Leu	Leu	Pro	Phe	Val	Phe	Phe	Tyr	Gln	Glu	Ala	Lys	Ser
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Phe	Lys	Arg	Arg	Val	Asp	Leu	Arg	Gly	Cys	Leu	Cys	Arg	Asn	Leu	Tyr
			420					425					430		
Ile	Arg	Ser	Arg	Asn	Thr	Ala	Cys	Thr	Gln	Thr	Ile	Ser	Ala	Gly	Lys
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Lys	Arg	Thr	Leu	Leu	Thr	Glu	Leu	Leu	Ser	Trp	Gln	Gln	Lys	Leu	Leu
	450					455					460				
Ser	Pro	Lys	Ala	Leu	Pro	Cys	Trp	Phe	Gln	Ser	Leu	Gln	Phe	Gln	Gln
465					470					475				480	
Val	Leu	Ser	Leu	Ser	Leu	Ser	Leu	Ser	Leu	Ser	Leu	Ser	Leu	Ser	Leu
				485					490					495	
Ser	His	Ile	Ile	His	Leu	Ile	Val	Ser	Ser	Tyr	Lys	Phe	Ile	Arg	Val
			500					505					510		
Phe	Ile	Arg	Val	Gln	Ala	Phe	Gly	Asn	Leu	Ile	Met	Val	Gly	Tyr	Ile
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Phe Lys Thr Cys Asn Leu His Phe Val Ser Leu Phe His Ala Ile Phe  
 530 535 540  
 Phe Ser Leu Ile Gly Leu Arg His Leu Leu Glu Leu Ala His Met Leu  
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 Phe Lys Tyr Leu Gly Leu Leu Val Asn Gly Lys Lys Leu Ile Asp Phe  
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 Arg Tyr Asn Ala Ile Tyr Ile Tyr Ile Tyr Ile Tyr Ile Tyr  
 580 585 590  
 Ile Tyr Ile Tyr Ile Tyr Tyr Arg Lys Leu Gly Ile Ile His Thr Tyr  
 595 600 605  
 Val Arg Phe Ile Ile Lys Val Val Leu Ser Met Gln Ile Ser Leu Thr  
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 Pro Leu Ala Asp Ala Arg Pro Ile Cys Leu Ile Ile Phe His Arg Ala  
 625 630 635 640  
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 Val Ser Ala Thr Glu Cys Ser Ala Thr Ile Phe Pro Arg Pro Ala Arg  
 660 665 670  
 Trp Ser Val Ser Thr Asn Pro Thr Thr Ser Arg Gly Asp Ser Thr Ile  
 675 680 685  
 Gln Thr Arg Pro Pro Cys Lys Pro Ser Gly Thr Pro Thr Ser Lys Ser  
 690 695 700  
 Cys Trp Met Ser Pro Asp Pro Thr Cys Ser His Trp Pro Pro Ile Leu  
 705 710 715 720  
 Arg Pro Pro Ala Thr Gly Ser Gly Gly Thr Ser Ser Pro Thr Gly Pro  
 725 730 735  
 Ala Ser Pro Phe Asp Thr Leu Ser Glu Thr Ser Ser Pro Asp Arg Ile  
 740 745 750  
 Trp Arg Ser Thr Ser Ser Pro Pro Cys Ala Thr Ser Thr Met Leu Cys  
 755 760 765  
 Pro Arg Leu Ala Cys Lys Thr Arg Ser Arg Ser Arg Pro Arg Ser Thr  
 770 775 780  
 Arg Ala Ser Ser Ala Arg Pro Thr Leu Pro Pro Pro Ala Pro Ser Pro  
 785 790 795 800  
 Pro Pro Pro Arg Arg Thr Ala Pro Ser Cys Ser Ser Trp Arg Val Thr  
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 Glu Arg Arg Ser Trp Ser Met Cys Thr Leu Ile Leu Ala Thr Pro Ala  
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 Ser Ser Cys Arg Met Gly Asp Ser Ala Ile Arg Thr Cys Ser Thr Pro  
 850 855 860  
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 865 870 875 880  
 Trp Arg Trp Trp Cys Arg Arg Ala Gly Gly Arg Arg Arg Ala Glu Glu  
 885 890 895  
 Pro Lys Arg Ala Pro Ala Thr Arg Arg Arg Thr Thr Arg Thr Ser Gly  
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 Met Leu Ala Glu Glu Arg Arg Gly Asp Gln Gly Arg Arg Ser Arg His  
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 930 935 940  
 Arg Thr Leu Ala Cys Phe Ile Pro Thr Ser Ser Pro Tyr Thr Lys Ala  
 945 950 955 960  
 Phe Arg Asn Leu Val Arg Leu Met Asn His Leu Leu Pro Thr Tyr Leu  
 965 970 975  
 Pro Thr Asn Lys Thr Asn Lys Ala Pro Lys Arg Glu Asn Ser Asp Leu  
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 Gly Glu Ser Ile Met Met Ile Tyr Asn Lys His Pro Ser Leu Leu Ile

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          995              1000              1005
Ile Ser Met Leu Gln Val Ser Asn Leu Asn Gly Ser Gln Phe Gly Pro
  1010              1015              1020
Thr Ser Ile Leu Gly His Asn Tyr Phe Ile Glu Leu Tyr Ile Gln Lys
1025              1030              1035              1040
Lys Met Cys Leu Glu Cys Leu Ile Gln Tyr Asp Phe Ser Leu Gln Asp
              1045              1050              1055
Tyr Leu Phe Ser Val Ser Phe Ser Met Pro Lys Asn His His Leu Leu
              1060              1065              1070
Trp Gly Met Phe Tyr Thr Leu Met Val Leu His His His His Ser Cys
              1075              1080              1085
Phe Ile Leu Gly Leu Val Leu Phe Ile Ile Thr Lys Phe Gly Ser Leu
              1090              1095              1100
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<210> 20  
 <211> 1126  
 <212> PRT  
 <213> Musa acuminata

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Leu Leu Phe Gly Ile Pro Asn Ile Pro Gly Leu Leu Tyr Phe Trp Arg
              35              40              45
Leu Asn Thr Lys Phe Phe Ser His Leu Lys Leu Phe Phe Arg Ser Tyr
              50              55              60
Gly His Ile Lys Gln Ile Cys Gln Arg Phe Ser Pro Ser Thr Arg Lys
65              70              75              80
Gln Gln Ser Arg Val Ile Lys Phe Val Pro Ser Ser Gln Ser Thr Thr
              85              90              95
Pro Lys Tyr Ser Leu Asn Gln Ile Leu Thr Ile Asn Asn Asn Pro Ser
              100              105              110
Asn Cys Asn Ser Lys Gln Gly Ser Leu Ser Gln Gln Arg Ser Phe Leu
              115              120              125
Asn Thr Lys Ile Cys His Asn Leu Ser Leu Leu Ile Ser Val Val Ser
130              135              140
Gly Gln Asp Ser Cys Cys Thr Leu Lys Phe Glu Leu Lys Ser Asp Arg
145              150              155              160
Val Ile Ser Val Ile Glu Ile Asp Asp Arg Thr Asp Phe Lys Ser Thr
              165              170              175
Leu Arg Asn Leu Gly Leu Ile Lys Leu Ile Arg Val Ser Val Ile Leu
              180              185              190
Asp Asp Lys Asn Leu Asp Ser Leu Asn Leu Ile Leu Val Thr Tyr Phe
              195              200              205
Leu Lys Ile Ile Ile Ile Ile Leu Ile Leu Glu Lys Lys Lys Val Leu
210              215              220
Pro Leu Lys Ser Gly Arg Thr Lys Leu Met Asn Thr Val Thr Ile Arg
225              230              235              240
Leu Asn Phe Thr His Val Gln Glu Asn Phe Val Glu Val Met Ser Asn
              245              250              255
Gln Cys Ser Ser Leu Gln Leu Gly Val Thr Ser Thr Thr Ile Gly Leu
              260              265              270

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 290 295 300  
 Gly Ile Gly Arg Val His Ala Leu Thr Asp Gln Leu Gly Leu Phe Ser  
 305 310 315 320  
 Leu Val Thr Thr Ala Glu His Glu Lys Met Val Asp Gly Ser Lys Leu  
 325 330 335  
 Gln Met Tyr Leu Thr Ser Ser Arg Leu Leu Ile Arg Cys Met His Leu  
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 Arg Leu Phe His Leu Leu Phe Ser Met His Arg Leu Asn Val Lys Asp  
 355 360 365  
 Met Gln Glu Ser Ile Pro Leu Phe Val Thr His Ile Pro Asn Gly Thr  
 370 375 380  
 Arg Leu Pro Ser Pro His Pro Glu Phe Trp Lys Gly Gly Trp Trp Gly  
 385 390 395 400  
 Glu Arg Thr Ser Cys Cys Leu Ser Phe Ser Ser Ile Arg Lys Pro Arg  
 405 410 415  
 Val Ser Arg Gly Gly Thr Gly Asp Asp Ala Cys Val Glu Thr Ser Ile  
 420 425 430  
 Gly Val Gly Thr Gln His Val Asp Glu His Lys Pro Phe Gln Arg Gly  
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 Arg Arg Glu Pro Phe Gln Ser Cys Cys His Gly Asn Lys Ser Phe Ser  
 450 455 460  
 Leu His Lys Arg Leu Cys Leu Ala Gly Phe Ser Pro Cys Ser Ser Ser  
 465 470 475 480  
 Asn Lys Phe Ser Leu Ser Leu Ser Leu Ser Leu Ser Leu Ser  
 485 490 495  
 Leu Ser Leu Ile Leu Tyr Ile Leu Leu Ala Leu Thr Asn Leu Leu Gly  
 500 505 510  
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 580 585 590  
 Ile Tyr Ile Ile Ile Gly Arg Asn Leu Val Phe Thr Arg Met Phe Ala  
 595 600 605  
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 625 630 635 640  
 Ser Asp Val Phe Tyr Cys Arg Ser Ala Ile Asp Trp Cys Leu Leu Arg  
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 660 665 670  
 Gln Ile Gln Gln His Arg Glu Asp Glu Thr Leu Arg Ser Lys Pro Gly  
 675 680 685  
 Arg Pro Ala Ser Pro Gln Glu Leu Gln His Pro Ser Pro Val Gly Cys  
 690 695 700  
 Pro Pro Ile Arg Arg Ala Val Thr Gly Leu Gln Ser Phe Gly Arg Arg  
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 Arg Leu Asp Pro Glu Arg Arg Arg Leu Leu Ala Gln Arg Leu Leu  
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 Ser Ile His Ser Cys Arg Lys Arg Ala Asp Pro Arg Ile Gly Ser Gly

740 745 750  
 Ala Val His Pro Pro Arg His Ala Gln His Leu Gln Cys Phe Val Leu  
 755 760 765  
 Gly Trp Pro Ala Lys Pro Asp Gln Gly Leu Asp Arg Gly Arg His Gly  
 770 775 780  
 Arg Pro Arg His Val Leu Pro Ser Leu Arg Arg Arg Leu Leu Leu Arg  
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 Glu Thr Asn Leu Gly Ile Ile Ser Tyr Leu Pro Thr Tyr Leu Arg Ile  
 965 970 975  
 Lys His Glu Ile Lys His Gln Asn Lys Gly Arg Ile Leu Ile Leu Glu  
 980 985 990  
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 995 1000 1005  
 Cys Tyr Lys Phe Leu Glu Thr Thr Asp His Asn Leu Asp Leu Gln Val  
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 <211> 1121  
 <212> PRT  
 <213> Musa acuminata

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<223> n = A,T,C or G

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<221> misc_feature
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      5950, 5990, 6006, 6011, 6344, 6401, 6416, 6596, 6600, 6608,
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<223> n = A,T,C or G

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<221> misc_feature
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<223> n = A,T,C or G

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320, 326, 458, 656, 673, 687, 713, 774, 883, 899, 952, 1038,

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 1782, 1783, 1791, 1794, 1800, 1806, 1807, 1808, 1810, 1815,  
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Val	Ala	Ser	Thr	Ala	Gly	Ala	Val	Thr	Arg	Ile	His	Thr	Ala	Ala	Lys
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Asp	Ala	Arg	Ala	Asn	Ala	Ala	Val	Ala	Ala	Val	Ala	Ala	Val	Ala	Ala
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Trp	Pro	Arg	Ser	Ser	Ala	Pro	Pro	Ser	Ser	Ser	Arg	Cys	Ser	Ile	Ala
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 Thr Cys Tyr Glu Val Cys Ser Thr Met Trp Lys Gln Ser Asn Ala Leu  
 1010 1015 1020  
 Ala Met Arg Phe Gly Leu Thr Tyr Ser Thr Met Asp Ala Xaa Lys Glu  
 1025 1030 1035 1040  
 Gly Thr Xaa Gln Asp Leu Val Gly Lys Asp Ser Ile Leu Ala Arg Gln  
 1045 1050 1055  
 Met Pro Ile Gly Asn Gly Leu Thr Glu Thr Ser Thr Lys Thr Ser Asp  
 1060 1065 1070  
 Leu Val Gly Asn Gly Cys Leu Val Arg Lys Asp Gly Ser Arg Leu Ile  
 1075 1080 1085  
 Lys Ile Lys Leu Ile Ile Tyr Gln Thr Leu Asn Gly Arg Ile Val Arg  
 1090 1095 1100  
 Lys Asp Gly Ser Arg Leu Ile Lys Ile Lys Leu Ile Val Tyr Gln Thr  
 1105 1110 1115 1120  
 Leu Ile Thr Leu Asp Lys Arg Gly Thr Met Tyr Asn Trp Glu Ala Gln  
 1125 1130 1135  
 Ile Leu Phe Pro Asn Thr Phe Leu Leu Lys Pro Phe Ala Thr Ile Ala  
 1140 1145 1150  
 Ile Leu Ile Tyr Phe Phe Tyr Ile Ile Ile Xaa His Ser Tyr Met Arg  
 1155 1160 1165  
 Tyr Asp Ile Asn Leu Arg Pro Ala Leu Val Asn Xaa Leu Ile Xaa Val  
 1170 1175 1180  
 Thr Pro Glu Ala Ile Ile Leu Thr Leu Thr Trp Arg Thr Leu Val Gly  
 1185 1190 1195 1200  
 Pro Xaa Ile Xaa Met Glu Val Asp Lys His Asp Asp Asp Gly Tyr Met  
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 Phe Met Cys Leu Ser Lys Ser Ile Lys Leu Glu Ser Asn Lys Thr Ile  
 1220 1225 1230  
 Lys Val Gly Arg Pro Leu Ser Ser Met Ser Arg Ser Ser Thr Phe Gln  
 1235 1240 1245  
 His Arg Ala Glu Arg Ser Tyr Leu Thr Leu Thr Cys Pro Ser Gly Arg  
 1250 1255 1260  
 Arg His Arg Leu Ala Glu Thr Lys Gly Gln Ser Pro Asn Ser His Ser

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1265          1270          1275          1280
Lys Asp Glu Phe Ile Phe Ile Arg Ala Leu Gln Ser Cys Leu Ile Ile
          1285          1290          1295
Phe Tyr Tyr Tyr Tyr Tyr Tyr Leu Asn Gly Lys Phe Thr Glu Tyr Ile
          1300          1305          1310
Asp Ile Leu Val Ser Ile Lys Tyr Phe Lys Lys Arg Glu Lys Val Asp
          1315          1320          1325
Leu Ile Leu Gly Phe Leu Leu Ala Ile Lys Val Phe Ser Asn Phe Gln
          1330          1335          1340
Asn Val Ser Asn Glu Pro Val Gly Leu Val Tyr Gly Tyr Asp Glu Ile
          1345          1350          1355          1360
Ser Ile Cys Ile Lys Asn Tyr Gln Leu Asp Phe Tyr Phe Leu Thr Leu
          1365          1370          1375
Asn Lys Trp Thr Tyr Ile Ile Ile Lys Ser Cys Asp Val Val Ile Thr
          1380          1385          1390
Tyr Phe Leu Ile Xaa Lys Ile Xaa Asn Arg Glu Lys Ile Arg Leu Leu
          1395          1400          1405
Ser Leu Leu Xaa Met Xaa Tyr Asn Ile Leu Ile Pro Phe Xaa Ile Asp
          1410          1415          1420
Ser Arg Arg Ile Arg Lys Ile Ile Ile Ala Ser Asn Gln Ile Gln Asn
          1425          1430          1435          1440
Xaa Ile Met Leu Leu Thr Phe Glu Lys Ser Ser Ser Leu Asp Asn Ile
          1445          1450          1455
Leu Ile Asp Lys His Xaa Tyr Ile Tyr Ile Tyr Xaa Tyr Gln Leu Leu
          1460          1465          1470
Lys Xaa Ile Phe Lys Leu Ile Lys Phe Ile Lys Ile Lys Arg Thr Lys
          1475          1480          1485
Leu Val Leu His His Asn Val Val Ser Val Arg Thr Cys Glu Ile Xaa
          1490          1495          1500
Ile Asn Thr Asp Arg Lys Phe Gln Thr Ile Thr Ser Ser Thr Lys Gln
          1505          1510          1515          1520
Asn His Ile Lys Glu Ser Ser Tyr Ile Tyr Ile Tyr Ile Tyr Thr Thr
          1525          1530          1535
Leu Leu Ile Leu Trp Thr Tyr Asn Thr Ser Gln Glu Thr Glu Thr Lys
          1540          1545          1550
Val Ala Glu Ser Trp Gln Xaa Leu Lys Arg Leu Phe Val Glu Val Lys
          1555          1560          1565
Glu Thr His Val Tyr Lys Asn Cys His Asp Tyr Thr Leu Lys Lys Lys
          1570          1575          1580
Arg Gly Glu Arg Glu Lys Glu Ala Pro Leu Leu Thr Gly Leu Val His
          1585          1590          1595          1600
Glu Glu Leu Phe Val Asp Ala Val Gln Thr Phe Val Ser Thr Asp Gly
          1605          1610          1615
Asn Lys Glu Ala Val Ser Gln His Ala Ile Cys Ser Leu Trp Ser Pro
          1620          1625          1630
Asp Leu Ser Lys Asp Leu Pro Leu Arg Phe Pro His Ala Pro His Leu
          1635          1640          1645
Phe Gln Arg Lys Leu His Ser Gly Gln Glu Ser Ile Ser Leu Tyr Lys
          1650          1655          1660
His His Leu Pro Pro Thr Pro Pro Pro Pro Pro Leu Leu Arg Arg
          1665          1670          1675          1680
Met Lys Ala Leu Leu Val Ile Phe Thr Leu Ala Ser Ser Leu Gly
          1685          1690          1695
Ala Phe Ala Glu Gln Cys Gly Arg Gln Ala Gly Gly Ala Leu Cys Pro
          1700          1705          1710
Gly Gly Leu Cys Cys Ser Gln Tyr Gly Trp Cys Gly Asn Thr Asp Pro
          1715          1720          1725
Xaa Cys Gly Gln Gly Cys Xaa Xaa Gln Cys Xaa Xaa Ser Thr Pro Ser
          1730          1735          1740

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Pro Ser Thr Pro Ser Gly Gly Gly Xaa Val Gly Ser Ile Ile Ile Ser  
 1745 1750 1755 1760  
 Ser Leu Phe Xaa Gln Met Leu Lys His Xaa Xaa Asp Xaa Ala Xaa Pro  
 1765 1770 1775  
 Gly Xaa Gly Phe Tyr Xaa Xaa Thr Ala Phe Ile Ser Ala Ala Xaa Ser  
 1780 1785 1790  
 Phe Xaa Gly Phe Gly Thr Thr Xaa Asp His Ser Thr Asn Xaa Xaa Xaa  
 1795 1800 1805  
 Ile Xaa Ala Phe Leu Val Xaa Thr Ser Xaa Glu Thr Thr Xaa Asn Pro  
 1810 1815 1820  
 Xaa Xaa Ser Arg Gly Ser Ser Xaa Xaa Tyr Xaa Thr Xaa Xaa Cys Ile  
 1825 1830 1835 1840  
 Gly Xaa Gly Thr Trp Val Val His Arg Ala Xaa Trp Pro Phe Ala Trp  
 1845 1850 1855  
 Gly Tyr Cys Phe Val Gln Xaa Gln Asn Pro His Arg Thr Thr Ala Ser  
 1860 1865 1870  
 Pro Ala Arg Xaa Gly Arg Ala Leu Xaa Ala Xaa Asn Thr Thr Ala Glu  
 1875 1880 1885  
 Ala Pro Ser Lys Ser His Ser Thr Thr Thr Thr Gly Arg Pro Gly Lys  
 1890 1895 1900  
 Pro Ser Ala Pro Thr Cys Ser Thr Thr Gln Thr Trp Trp Pro Pro Thr  
 1905 1910 1915 1920  
 Arg Pro Ser Pro Ser Arg Arg Leu Cys Gly Ser Gly Leu Leu Ser Arg  
 1925 1930 1935  
 Pro Ser Arg Arg Ala Thr Thr Pro Gly Ala Gly Arg His Pro Thr Pro  
 1940 1945 1950  
 Thr Gly Arg Pro Glu Gly Phe Arg Ala Thr Val Ser Pro Pro Thr Ser  
 1955 1960 1965  
 Ser Met Glu Gly Trp Ser Ala Gly Lys Gly Pro Met Pro Gly Trp Arg  
 1970 1975 1980  
 Ile Gly Ser Ala Ser Thr Xaa Gly Thr Ala Thr Cys Trp Gly Ala Thr  
 1985 1990 1995 2000  
 Glu Thr Thr Trp Thr Ala Thr Thr Xaa Val Pro Leu Leu Xaa Pro Ile  
 2005 2010 2015  
 Leu Cys Ala Asn Pro Cys Asn Asn Ala Ile Asn Ala Thr Ala Glu Ile  
 2020 2025 2030  
 Ala Thr Pro Val Asp Cys Arg Ser Cys Gly Gly Asn Leu Gln Lys Leu  
 2035 2040 2045  
 Ser Thr Ser Ser Trp Pro Ser Ile Ile Val Asp Arg Arg Gln Met His  
 2050 2055 2060  
 Pro Ser Asn Val Leu Glu Xaa Val Asn Ala Xaa Ser Ile Gly Lys Leu  
 2065 2070 2075 2080  
 Lys Met Leu Glu Ile Lys Leu Phe Ile Phe Tyr Asn Tyr Lys Tyr Phe  
 2085 2090 2095  
 Asn Ile Phe Phe Asn Leu Lys Asp Pro Lys Lys Ser Xaa Tyr Lys Asp  
 2100 2105 2110  
 Phe Ile Tyr Gly Leu Gly Tyr Xaa Xaa Xaa Ile Xaa Lys Ile Asn Ile  
 2115 2120 2125  
 Leu Leu Ile Leu Arg Ile Leu Lys Lys His Asn Tyr Lys Asp Phe Leu  
 2130 2135 2140  
 Tyr Gly Xaa Gly Tyr Gln Xaa Xaa Ile Val Lys Ile Xaa Ile Asn Cys  
 2145 2150 2155 2160  
 Ile Lys Leu Lys Tyr Lys Tyr Ile Xaa Ile Met Ile Ser Arg Met Trp  
 2165 2170 2175  
 Arg Leu Asp Leu Glu Ile Glu Val Glu Thr Xaa Xaa Glu Ile Met Leu  
 2180 2185 2190  
 Ile Met Gly Asn Phe Leu Leu Phe Pro Arg Arg Pro Trp Lys Pro Asn  
 2195 2200 2205  
 Ile Arg Asn Arg Ser Cys Asn Asn His Val Ile Ile Xaa Glu Leu Val

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      2210              2215              2220
Val Val Ile Leu Arg Pro Gln Ile Thr Val Phe Xaa Gln Gly Thr Asn
2225              2230              2235              2240
Ile Asn Glu Ser Asn Val Val Ser Ile Leu Phe Tyr Thr Phe Ile Pro
      2245              2250              2255
Xaa Ser Arg Cys Ser His Asp Leu Ala His Pro Lys Cys Ile Arg Ser
      2260              2265              2270
Leu Ile Pro Leu Arg Trp Ser Val Leu Thr Arg Asp Leu Val Glu Gly
      2275              2280              2285
Ala Val Ser Phe Xaa Tyr Val Glu Val Lys Asp His Leu Tyr Xaa Xaa
      2290              2295              2300
Pro Cys Arg Phe Thr Xaa Gly Xaa Ser Leu Glu Ile Gly Leu Pro Trp
2305              2310              2315              2320
Asn Ser Xaa Gly Val Pro
      2325

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<210> 25

<211> 2258

<212> PRT

<213> Musa acuminata

<220>

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459, 654, 669, 685, 710, 767, 878, 893, 944, 1029, 1104,  
1107, 1162, 1164, 1182, 1185, 1372, 1375, 1379, 1382, 1393

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<221> VARIANT

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1676, 1690, 1706, 1707, 1714, 1719, 1727, 1730, 1734, 1740,  
1742, 1743, 1744, 1750, 1751, 1752, 1754, 1756, 1757, 1760,  
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<223> Xaa = Any Amino Acid

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2060, 2061, 2063, 2083, 2087, 2088, 2092, 2106, 2122, 2123,  
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<223> Xaa = Any Amino Acid

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      20              25              30
Phe Leu Ser Lys Asp Ser Pro Leu Arg Phe Pro Thr Phe Thr Ser Phe
      35              40              45
Gly Pro Glu Ala Ser Gln Arg Ala Gly Ile His Phe Ser Ile Ala Pro
      50              55              60
Met Arg Lys Ala Ser Arg Gly Gly Ser Leu Pro Arg Arg Ala Val Leu
      65              70              75              80
Pro Val Arg Leu Val Arg His Gly Ser Ile Leu Arg Pro Arg Met Pro
      85              90              95
Glu Pro Met Arg Arg Arg Arg Arg Trp Gln Arg Gly Leu Asp His
      100              105              110
Gln Leu Leu Pro Leu Arg Ala Asp Ala Glu Ala Ser Gln Arg Arg Ser

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      115              120              125
Leu Pro Arg Gln Gly Phe Leu His Val Gln Arg Leu His Arg Arg Arg
 130              135              140
Gln Leu Leu Gln Arg Val Arg Asp Asp Arg Arg Arg Pro Lys Lys Xaa
 145              150              155              160
Lys Glu Ile Ala Ala Phe Leu Ala Xaa Thr Ser His Xaa Thr Thr Gly
      165              170              175
Asn Ser His Ile Ser Arg Ser Ser Thr Val Tyr Gly Ile Xaa Asn Met
      180              185              190
Phe Gly Val Trp Gln Val Gly Xaa Arg Arg Ala Arg Trp Ser Val Arg
      195              200              205
Leu Gly Leu Leu Leu Arg Pro Xaa Thr Lys Pro Ser Ser Xaa Tyr Cys
      210              215              220
Val Pro Xaa Pro Xaa Gly Arg Ala Leu Gln Gln Lys Ile Leu Arg Pro
 225              230              235              240
Lys Pro Xaa Gln Ile Ser Xaa Xaa Ala Xaa Phe Xaa Gln Phe Xaa Ala
      245              250              255
Ala Ile Glu Phe Thr Thr Met Pro Phe Leu Thr Gln Gln Ser Asp Val
      260              265              270
Xaa Cys Val Gln Gln Xaa Gln Xaa Arg Ala Gly Arg Glu Ser His Arg
      275              280              285
Phe Xaa Xaa Xaa Gln Gln Pro Arg Pro Gly Gly His Xaa Arg Asp His
      290              295              300
Leu Xaa Gln Asp Gly Ser Val Val Leu Asp Asp Ser Ser Val Ala Gln
 305              310              315              320
Ala Val Val Pro Arg Arg Asp Asn Arg Glu Leu Asp Ala Ile Gln Arg
      325              330              335
Arg Pro Gly Gly Arg Lys Ala Ser Gly Leu Arg Cys His His Gln His
      340              345              350
His Gln Trp Arg Val Gly Val Arg Glu Arg Val Arg Cys Gln Gly Gly
      355              360              365
Gly Asp Arg Leu Leu Gln Glu Val Leu Arg Leu Ala Gly Gly Glu Leu
      370              375              380
Arg Arg Gln Leu Gly Leu Leu Gln Pro Glu Thr Leu Cys Phe Tyr Ser
 385              390              395              400
Ser Tyr Ser His Ile Leu Ala Val Ser Tyr Gly Asp Asn Leu Glu Cys
      405              410              415
Tyr Asn Gln Arg Pro Phe Thr Ser Asp Thr Thr Val Thr Asn Pro Cys
      420              425              430
Asn Asn Ala Ile Asn Ala Ile Thr Glu Ile Ala Thr Pro Val Asp Cys
      435              440              445
Arg Ser Cys Gly Gly Ser Leu Gln Lys Leu Xaa Tyr Ile His Gly Pro
      450              455              460
Gln Leu Ser Leu Thr Val Ile Ile Cys Ile His Gln Met Ser Ser Asn
 465              470              475              480
Val Leu Glu Val Asn Ala Tyr Ser Ile Gly Lys Met Lys Met Leu Glu
      485              490              495
Ile Lys Leu Ile Ile Phe Leu Leu Ile Phe Tyr Ile Phe Ser Arg Ser
      500              505              510
Lys Ser Asn Tyr Lys Asp Phe Ile Tyr Gly Leu Gly Tyr Glu Tyr Leu
      515              520              525
Ile Ile Lys Ile Asn Ile Leu Phe Asn Leu Lys Asp Leu Ile Ile Ser
      530              535              540
Ile Phe Tyr Met Asp Trp Asp Ile Asn Ser Ile Tyr Leu Lys Phe Tyr
 545              550              555              560
Lys Asn Phe Lys Phe Lys Asn Asn Thr Lys Asn Ile Ile Arg Ser Asp
      565              570              575
Arg Glu Arg Asp Asp Asp His Glu Ile Glu Val Glu Ser Lys Lys Glu
      580              585              590

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Ile Thr Leu Ile Met Gly Asn Phe Val Leu Phe Ala Arg Ser Arg Trp
    595                                600                                605
Pro Trp Thr Pro Asn Ile His Asn Arg His Ala Ile Thr Met Leu Ser
    610                                615                                620
Tyr Val Ser Leu Ser His Ile Leu Pro Ile Thr Ser Ser Arg Ile Leu
    625                                630                                635                                640
Ile Lys Pro Ala His His Ser Phe Ala Pro Leu Tyr His Xaa Ser Val
    645                                650                                655
Arg Met Ala Pro Ile Pro Ser Val Trp Ser Pro Gly Xaa Trp Ser Val
    660                                665                                670
Leu Thr Arg Gly Leu Val Glu Gly His Arg Pro Cys Xaa Leu Arg Gln
    675                                680                                685
Arg Leu Lys Ile Thr Pro Leu Ala Ile Arg Trp Val Pro Ile Arg Ser
    690                                695                                700
Lys Ser Gly Gly Phe Xaa Thr Arg Pro Ile Gln Tyr Leu Ser Gln Glu
    705                                710                                715                                720
Leu Glu Leu Arg Val Gly Ser Thr Pro Asn Ala Val Pro Gly Val Ala
    725                                730                                735
Phe Ile Pro Ile Pro Ala Cys Asp His Thr Leu Ser Ser Ser Val Ile
    740                                745                                750
Ile Val Arg Trp Val His Ala Leu Ser Asn Leu Leu Asp Ser Xaa Ser
    755                                760                                765
Phe Asp Thr Ala Ser Tyr Leu Leu Cys Gly Pro Ile His Ser Cys Ile
    770                                775                                780
Val Ser Tyr Gly Leu Glu Gln Ser Val Cys Arg Gly Thr Val Ser Ser
    785                                790                                795                                800
Gly Trp Leu Ala Ser Gly Ser Trp His Val Gly Ser Ile Gln His Ile
    805                                810                                815
Gly Leu Gly Ile Pro Cys Arg Val Tyr Cys Gly Ser His Val Met Trp
    820                                825                                830
Gly Gly Cys Gln Asn Met Leu Tyr His Ser Leu Pro Thr Lys Glu Leu
    835                                840                                845
Cys His Arg Arg Ile Val Asp Thr Ala Trp Val Leu Trp Ser Val Leu
    850                                855                                860
Val Arg Leu Ser Trp Val Asp Tyr Phe Ile Lys Leu Ala Xaa Cys Trp
    865                                870                                875                                880
Leu Gly Lys Val His Leu Val Gly Met Val Glu Thr Xaa Pro Arg Lys
    885                                890                                895
Val Gly Asp Leu Val Phe Asp Asn Gln Leu Phe Met Arg Arg Met Val
    900                                905                                910
Ser Leu Arg Trp Gly Val Cys Ser Phe Arg Phe Val Ala Met Asp Cys
    915                                920                                925
Leu Leu Glu Ala Trp Phe Asp Cys Ser Val Gly Arg Arg Tyr Leu Xaa
    930                                935                                940
Arg Ser Ser Ile Pro Cys Ser Glu Lys Asp Leu Pro Arg Ser Leu Ala
    945                                950                                955                                960
Arg Pro Cys Ser Gln Arg Met Cys Met Ser Arg Ser Ile Gln Pro Cys
    965                                970                                975
Gly Ser Arg Met His Gln Leu Gly Leu Ala Cys Ser Arg Leu Lys Gln
    980                                985                                990
Lys Asp Ile Leu Ala Thr Arg Phe Ala Gln Pro Cys Gly Ser Asn Gln
    995                                1000                                1005
Met His Leu Leu Gly Leu Ala Leu Thr Arg Gln Trp Thr Leu Val Ser
    1010                                1015                                1020
Glu Lys Gly Leu Xaa Lys Thr Leu Ala Arg Thr Ser Arg Tyr Leu Leu
    1025                                1030                                1035                                1040
Asp Asn Arg Cys Leu Val Met Asp Leu Arg Leu Ser Arg Gln Arg Leu
    1045                                1050                                1055
Ala Glu Thr Trp Ala Met Asp Ala Tyr Lys Glu Arg Met Ala Arg Asp

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1060					1065					1070						
Arg	Ser	Asn	Asn	Tyr	Lys	Phe	Ile	Lys	His	Leu	Met	Asp	Ala	Tyr	Lys	
1075					1080					1085						
Glu	Arg	Thr	Asp	Arg	Asp	Arg	Ser	Asn	Asn	Tyr	Lys	Phe	Ile	Lys	Xaa	
1090					1095					1100						
Leu	Leu	Xaa	His	Trp	Thr	Lys	Glu	Val	Leu	Cys	Asn	Ile	Lys	Ile	Gly	
1105					1110					1115					1120	
Arg	His	Lys	Tyr	Tyr	Phe	Gln	Ile	Leu	Phe	Ser	Leu	Ser	Pro	Ser	Pro	
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Pro	Leu	Pro	Phe	Ser	Ile	Phe	Ser	Ile	Leu	Ser	His	Asn	Ile	Arg	Thr	
1140					1145					1150						
Asp	Met	Thr	Thr	Phe	Asp	Leu	Leu	Thr	Xaa	Leu	Xaa	His	Gln	Lys	Pro	
1155					1160					1165						
Tyr	Cys	Leu	Pro	His	Asp	Gly	Asp	Glu	Leu	Leu	Val	Gln	Xaa	Ser	Asn	
1170					1175					1180						
Xaa	Trp	Lys	Trp	Thr	Ser	Thr	Met	Thr	Arg	Met	Ala	Thr	Cys	Ser	Cys	
1185					1190					1195					1200	
Val	Asp	Phe	Pro	Ser	Asn	Gln	Ser	Ser	Trp	Asn	Arg	Ile	Arg	Arg	Leu	
1205					1210					1215						
Lys	Gly	Asp	Asp	His	Val	Gln	Cys	His	Ala	His	Gln	His	Asn	Ser	Asn	
1220					1225					1230						
Thr	Val	Gln	Lys	Asp	Leu	Ile	Leu	His	Leu	Ala	His	Pro	Ala	Ala	Gly	
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Ile	Asp	Trp	Arg	Lys	Arg	Arg	Val	Ser	Leu	Pro	Ile	His	Ile	Gln	Arg	
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Thr	Asn	Ser	Phe	Ser	Ser	Asp	Glu	His	Phe	Ser	Pro	Ala	Leu	Tyr	Phe	
1265					1270					1275					1280	
Ile	Ile	Ile	Ile	Ile	Ile	Asn	Met	Val	Ser	Leu	Gln	Asn	Ile	Ile	Phe	
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Phe	Gln	Asn	Ile	Leu	Lys	Asn	Asp	Lys	Gly	Arg	Arg	Trp	Ile	Ser	Asp	
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Phe	Tyr	Cys	Glu	Gln	Lys	Ser	Leu	Val	Arg	Thr	Ser	Lys	Met	Cys	Gln	
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Met	Asn	Pro	Asn	Lys	Trp	Val	Trp	Ser	Met	Val	Thr	Met	Arg	Ser	Val	
1330					1335					1340						
Phe	Val	Tyr	Lys	Lys	Ile	Ile	Asn	Leu	Ile	Phe	Ile	Phe	Pro	Leu	Ile	
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Ser	Gly	His	Asp	Ile	Ser	Ser	Asn	His	Val	Met	Xaa	Asp	Glu	Xaa	His	
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Ile	Phe	Xaa	Lys	Leu	Xaa	Ile	Glu	Lys	Lys	Asp	Tyr	Tyr	Pro	Phe	Tyr	
1380					1385					1390						
Xaa	Cys	Xaa	Ile	Ile	Phe	Ser	Leu	Ser	Ile	Ile	His	Val	Glu	Glu	Arg	
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Leu	Ser	His	Gln	Ile	Lys	Tyr	Arg	Xaa	Lys	Ser	Cys	Phe	Leu	Asn	Ser	
1410					1415					1420						
Lys	Asn	Asn	Leu	Pro	Leu	Leu	Ile	Ile	Ser	Leu	Leu	Ile	Ser	Ile	Xaa	
1425					1430					1435					1440	
Ile	Tyr	Ile	Tyr	Xaa	Tyr	Ile	Asn	Phe	Xaa	Ile	Phe	Leu	Asn	Leu	Asn	
1445					1450					1455						
Leu	Ser	Lys	Lys	Asp	Lys	Leu	Asn	Phe	Cys	Ile	Ile	Met	Val	Glu	Leu	
1460					1465					1470						
Val	Lys	Xaa	Gly	Ser	Arg	Thr	Leu	Ile	Glu	Asn	Ser	Lys	Pro	Leu	Leu	
1475					1480					1485						
Val	Leu	Leu	Asp	Glu	Asn	Lys	Thr	Ile	Lys	Asn	Pro	Leu	Ile	Tyr	Ile	
1490					1495					1500						
Tyr	Ile	Tyr	Ile	Leu	Leu	Tyr	Leu	Phe	Phe	Gly	Arg	Thr	Thr	Gln	Val	
1505					1510					1515					1520	
Arg	Lys	Pro	Lys	Gln	Arg	Trp	Arg	Lys	Val	Gly	Arg	Xaa	Arg	Asp	Phe	
1525					1530					1535						



Ser Lys Arg Arg His Thr Ser Ile Arg Ile Val Met Thr Ile Arg Arg  
 1540 1545 1550  
 Lys Arg Gly Glu Arg Glu Arg Arg Lys Arg His Cys Pro Val Leu Ser  
 1555 1560 1565  
 Met Arg Asn Cys Leu Ser Thr Asn Glu Gln Tyr Lys His Leu Cys Arg  
 1570 1575 1580  
 Gln Ile Cys Ser Lys Gly Ser Phe Thr Ala Gly Arg Asn Pro Phe Leu  
 1585 1590 1595 1600  
 Tyr Ile Ser Thr Thr Ser His Pro His His His His His His Cys  
 1605 1610 1615  
 Gly Gly Arg Pro Cys Cys Trp Ser Phe Leu Pro Trp Pro Arg Arg Ser  
 1620 1625 1630  
 Ala Pro Ser Pro Ser Asn Ala Glu Gly Lys Pro Gly Gly Leu Ser Ala  
 1635 1640 1645  
 Pro Ala Gly Cys Ala Val Ala Ser Thr Ala Gly Ala Val Thr Arg Ile  
 1650 1655 1660  
 His Xaa Ala Val Lys Asp Ala Xaa Xaa Asn Ala Xaa Ala Pro Arg Pro  
 1665 1670 1675 1680  
 Pro Leu Pro Leu Arg Ala Ala Val Ala Xaa Leu Ala Arg Ser Ser Ser  
 1685 1690 1695  
 Pro Pro Ser Ser Ser Arg Cys Ser Ile Xaa Xaa Thr Gln Pro Ala Pro  
 1700 1705 1710  
 Ala Xaa Ala Ser Thr Arg Xaa Pro Pro Ser Ser Pro Pro Xaa Pro  
 1715 1720 1725  
 Ser Xaa Gly Ser Gly Xaa Pro Ala Thr Thr Pro Xaa Ile Xaa Xaa Xaa  
 1730 1735 1740  
 Ser Arg Leu Ser Trp Xaa Xaa Xaa Leu Xaa Arg Xaa Xaa Val Ile Xaa  
 1745 1750 1755 1760  
 Xaa Ser Pro Glu Ala Arg Leu Gln Xaa Xaa Asp Arg Xaa Leu Asn Ala  
 1765 1770 1775  
 Leu Gly Xaa Ala Arg Gly Trp Ser Thr Val Pro Xaa Gly Xaa Ser Arg  
 1780 1785 1790  
 Gly Val Thr Ala Ser Ser Xaa Asn Arg Thr Leu Ile Gly Leu Leu Arg  
 1795 1800 1805  
 Arg Gln Leu Ala Xaa Ala Val Arg Cys Xaa Gln Xaa Ile Leu Arg Pro  
 1810 1815 1820  
 Lys Pro His Pro Asn Leu Ile Gln Leu Gln Leu Arg Ala Gly Arg Glu  
 1825 1830 1835 1840  
 Asn His Arg Leu Arg Pro Ala Gln Gln Pro Arg Pro Gly Gly His Arg  
 1845 1850 1855  
 Pro Asp His Leu Leu Gln Asp Gly Ser Val Val Leu Asp Asp Ser Ser  
 1860 1865 1870  
 Val Ala Gln Ala Val Val Pro Arg Arg Asp Asn Arg Glu Leu Asp Ala  
 1875 1880 1885  
 Ile Gln Arg Arg Pro Gly Gly Arg Lys Ala Ser Gly Leu Arg Cys His  
 1890 1895 1900  
 His Gln His His Gln Trp Arg Val Gly Val Arg Glu Arg Val Arg Cys  
 1905 1910 1915 1920  
 Gln Gly Gly Gly Asp Arg Leu Leu Gln Xaa Val Leu Arg Leu Ala Gly  
 1925 1930 1935  
 Gly Glu Leu Arg Arg Gln Leu Gly Leu Leu Gln Pro Xaa Ser Leu Tyr  
 1940 1945 1950  
 Leu Xaa Arg Tyr Tyr Val Arg Ile His Val Ile Thr Gln Thr Leu Leu  
 1955 1960 1965  
 Leu Lys Arg Leu Arg Glu Leu Ile Val Glu Val Ala Glu Glu Ile Phe  
 1970 1975 1980  
 Asn Lys Ser Ala Glu Gln Val His Gly Pro Gln Ser Ser Leu Ile Val  
 1985 1990 1995 2000  
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				2005						2010					2015
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cgac 4924

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<210> 28

<211> 4924

<212> DNA

<213> Musa acuminata

<220>

<221> misc\_feature

<222> 879, 3691, 4119

<223> n = A,T,C or G

<400> 28

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ggcttagtgt ttaactttac actaacttaa gtaaaaacag attacgtgtt ttgtcccgta 300

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<210> 29

<211> 1568

<212> PRT

<213> Musa acuminata

<220>

<221> VARIANT

<222> 1180, 1313

<223> Xaa = Any Amino Acid

<400> 29

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20          25          30
Val Lys Arg Cys Thr Cys Leu Arg Trp Thr His Leu Val Ser Phe Gly
35          40          45
Lys Val Arg Lys Ser Ala Glu Tyr Phe Trp Ile Leu Ser Leu Gly Trp
50          55          60
Cys Leu His Glu Pro Gln Glu Ser Ser Lys Tyr Gln Lys Pro Asn His
65          70          75          80
Lys Leu Lys Cys Asp Ile His Phe Cys Leu Met His Lys Thr Gly His
85          90          95
Ser Pro Leu Cys Leu Lys Gln Lys His Ser Ser Pro Ile His Pro Ile
100         105         110
Arg Ser Ser Glu Glu Lys Ile Phe Glu Ile His Phe Arg Gln Thr Lys
115         120         125
Ala Arg Asn Pro Trp Lys Gly Arg Ser Ser Tyr Glu Phe Ser Asn Thr
130         135         140
Cys Asn Ser Thr His Thr Val Asp Val Asn Asp Pro His Ala Leu Ser
145         150         155         160
Leu Leu Gly Ile Lys Pro Asn Met Arg Val Ser Leu Ala Leu Ile Pro
165         170         175
Ile Val Arg Ile Arg Val Ala Leu Arg Glu Gly Gly Ser Glu Leu Val
180         185         190
Gln Trp Ile Lys Thr Tyr Lys Phe Lys Asn Glu Phe Val Asn Thr Arg
195         200         205
Arg Phe Arg Phe Asn Ser Asn Leu Ser Arg Lys Pro Lys Val Asn Ser
210         215         220

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Ser Val Asn Asn Asn Phe Gly Lys Val Arg Thr His Thr Phe Lys Glu  
 225 230 235 240  
 His Thr Asn Leu Lys Trp Phe Gly Gln Asn Asp Leu His Pro Leu Val  
 245 250 255  
 Lys Pro Ser Ser Lys Arg Leu Pro Thr Ser Thr Ser Lys Ser Leu Arg  
 260 265 270  
 Gly Arg Thr Asn Thr Ser Leu Thr Thr Phe Tyr Asn Gly Ser Tyr Ser  
 275 280 285  
 Tyr Lys Phe Ser Thr Arg Lys Lys Glu Val Asn Met Gln Ala Ile Glu  
 290 295 300  
 Asn Lys Thr Cys Arg Leu Cys Gly Phe Phe Ser Gln Ser Ile Ala Ser  
 305 310 315 320  
 Gln Lys Leu Tyr Ser Leu Leu Arg Ile Glu Gly Tyr Leu Thr Pro Arg  
 325 330 335  
 Gly Phe Lys Phe Gly Leu Gln Ile Ser Asn Ala Leu Gly Phe Pro Arg  
 340 345 350  
 Leu Pro Val Pro Pro Pro Val Ser Val His Trp Thr Val Tyr Arg Cys  
 355 360 365  
 His Arg Arg Thr Ser Arg Val Leu Gly Gly Ala Thr Ala Thr Phe Ser  
 370 375 380  
 Ala His Trp Leu Asp Ser Lys Leu Asp Pro Asn Gln Ser Glu Leu Gly  
 385 390 395 400  
 Ser Asn Pro Val Thr Gly Leu Asp Pro Leu Ile Leu Thr Leu Ile Ile  
 405 410 415  
 Cys Lys Leu Arg Asn Lys Tyr Ser Pro Lys Gln Val Phe Asn Arg Gln  
 420 425 430  
 Thr Ser Ser Leu Leu Pro Ala Ile Phe Arg Gln Thr Ser Asp Ile Pro  
 435 440 445  
 Leu Asp Phe Phe Arg Thr Pro Ser Arg Val Pro Ile Leu Trp Arg Val  
 450 455 460  
 Arg Val Ala Glu Pro Ser Arg Ser Pro Gln Thr Ala Asp Asp Leu Phe  
 465 470 475 480  
 Gly Arg Leu Ser Lys Thr Ser Thr Ser Pro Arg Phe Leu Leu Gly Trp  
 485 490 495  
 Phe Arg Gln His Leu Arg Asn Phe Gly Leu Leu Glu Cys Pro Ser Asn  
 500 505 510  
 Leu Thr Pro Val Gly Leu Leu Tyr Ile Phe Arg Leu Ser Leu Ile Leu  
 515 520 525  
 His Thr Leu Asn Asn Met Asp Ile Asn Pro Ile Asn Phe His His Gln  
 530 535 540  
 Asn Ser Thr Phe Asn Lys His Pro Tyr Ser Ile Thr His Gln Ala Ile  
 545 550 555 560  
 Val Thr Leu Ser Thr Val Ile Thr Arg Ser Arg Val Met Ile Gln Val  
 565 570 575  
 Val Ser Leu Ile Gly Arg Thr Arg Ile Pro Tyr Pro Asn Pro Val Phe  
 580 585 590  
 Ser Thr Leu Leu Ala Tyr Pro Ser Leu Phe Leu Leu Leu Leu Lys Glu  
 595 600 605  
 Phe Lys Ser Lys Gln Ile Gln Asn Asn Thr Val Arg His Cys Asp Met  
 610 615 620  
 Leu Val Ser Gly Lys His Phe Ala His Pro Gln Thr Ser Ser Ala Ser  
 625 630 635 640  
 Ser Pro Thr Phe Ser Tyr Ile Thr Met Ser His Gly Phe Val Asp Asp  
 645 650 655  
 Arg Pro Pro Gln Ala Cys Leu Trp Leu Cys Leu Thr Glu Arg Glu Arg  
 660 665 670  
 Gln Thr Asp Ser Leu Leu Ile His Tyr Gly Asp Pro Ile Ala Ser Phe  
 675 680 685  
 Ala Ala Val Ile Cys Val Pro Asp Ala Cys Ala His Gly Lys Thr Ala

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        690                      695                      700
Gly Pro Ala Gln Leu Met His Trp Arg Leu Leu Gly Thr Lys His Arg
705                      710                      715
Arg Gly Lys Leu Ser Arg Cys Leu Cys His Arg Gln Leu Arg Ile Arg
725                      730                      735
Glu His Arg His Pro Phe Gln Val Trp His Gly Pro Asn Ser Arg Asp
740                      745                      750
Gln Pro Arg Arg Pro Leu Pro Ser Glu Gln Arg Leu Arg Ala Leu Glu
755                      760                      765
Gln Arg Asn Pro Val Leu Pro Gly Ala Trp Arg Gln Gly Asp Ala Leu
770                      775                      780
His Arg Arg Trp Arg Val Leu Trp Pro Glu Phe His Arg Arg Arg Gln
785                      790                      795
Gly Arg Ser Val Ile Pro Leu Ala Gln Phe Leu Gly Trp Phe Cys Cys
805                      810                      815
Ser Leu Leu Glu Thr Pro Arg Gly Cys Gly Ser Gly Trp His Arg Leu
820                      825                      830
Gln His Arg Arg Arg Glu His Arg Thr Leu Thr Cys Arg Phe Pro Gln
835                      840                      845
Gly Leu Gln Arg Ala Gly Gly Arg Asn Glu Glu Ser Ser Leu Glu Cys
850                      855                      860
Ser Ser Ala Val Ser Phe Pro Gly Leu Leu Ala Trp Gln Arg Thr Gln
865                      870                      875
Asn Arg Ser Leu Arg Leu Arg Val Gly Ala Val Leu Gln Gln Pro Phe
885                      890                      895
Val Pro Phe Leu Pro Glu Arg Tyr Gln Ser Cys Lys Cys Val Gln Gln
900                      905                      910
Leu Gly His Val His Pro Cys Ala Lys Ala Val Pro Trp Ala Ser Cys
915                      920                      925
Cys Ser Gly Cys Ser Asn Trp Trp Leu His Ser Thr Pro Ser His Ile
930                      935                      940
Ser Ser Ser Asp Pro Lys Gly Phe Arg Gln Val Arg Arg Asn His Ala
945                      950                      955
Val Asp Ile Pro Arg Gln Lys Leu Arg Leu Gln Phe Ser Ser Gln Val
965                      970                      975
Pro Arg Val Ser Ser Ala Ser Val Leu Gln His Leu Ile Tyr Ala Gly
980                      985                      990
Glu Val Phe Gln Val Asn Leu Asn Gly Val Asp Asp Arg Trp Ser Lys
995                      1000                      1005
Thr Pro Ile Ile Met Gly Pro His Pro Tyr Pro Cys Val Ala Thr Leu
1010                      1015                      1020
Trp Cys Phe Pro Cys Met Leu Val Phe Ser Ile Ile Gly Val Ser Phe
1025                      1030                      1035
Thr Phe Pro Tyr Phe Pro Cys Ser Lys Thr Val Tyr Leu Leu Pro Leu
1045                      1050                      1055
Pro Asn Leu Lys Lys Ile Lys Ile Tyr Asn Lys Tyr Pro Leu Phe Phe
1060                      1065                      1070
Phe Phe Arg Gln Ile Tyr Asn Ser Leu Ser Gln Leu Phe Lys Gln Lys
1075                      1080                      1085
Ile Ile Leu Phe His Thr Lys Asp Glu Ser Met Ile Ala Gly Leu Leu
1090                      1095                      1100
Ser Thr Gly Ala Glu Met Ala Thr Arg Glu Ala Cys Ala Thr Cys Asn
1105                      1110                      1115
Tyr Lys Phe Val Asn Ile Val Phe Leu Ala Met Phe Gly Asp Ala Ile
1125                      1130                      1135
Leu Pro Ser Gly His Thr Ser Gly Thr Val Ser Trp Glu Val Asn Leu
1140                      1145                      1150
Leu Leu Gly Ser Ser Ala Thr Asn Leu Val Arg Phe Phe Ser Met Val
1155                      1160                      1165

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Ser Thr Ser Thr Ser Lys Val Tyr Leu Ser Ala Xaa Pro Gln Phe Arg
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1185 1190 1195 1200
Gln Trp Val Leu His Pro Ala Trp Lys Val Phe Pro Gly Leu Pro Ala
1205 1210 1215
Ala Pro Gln Ala Ala Gly Arg Ser Ser Ile Pro Leu Val Ile Leu His
1220 1225 1230
Val Ser Tyr His Gln Glu Leu Gln Val Pro Arg Asp Tyr Asn Lys Lys
1235 1240 1245
Lys Gly Lys Asn Gly Asn Asn Asn Arg Pro Arg Thr Phe Arg Val
1250 1255 1260
Lys Thr Asn Asp Ser Met Arg Arg Phe Ala Met Asp Met Asp Arg Ser
1265 1270 1275 1280
Gln Ser Ser Pro Ser Leu Tyr Glu Pro Val Tyr Arg Phe Ser Leu Gln
1285 1290 1295
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1300 1305 1310
Xaa Tyr Lys Pro Asn Gly Ala Val Arg Gln Met Leu Asn Gly Arg Arg
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1330 1335 1340
Thr Thr His Ala Ile Arg Pro Leu Pro His Pro Leu His Leu Phe Leu
1345 1350 1355 1360
Leu Pro Leu Leu Arg Ser Val Ile Phe Cys Val Tyr Pro Ile Ser Phe
1365 1370 1375
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1380 1385 1390
Phe Trp Phe Lys Arg Met Met Ala Glu Ser Phe Gly Arg Trp Glu Ser
1395 1400 1405
Asp Pro Leu Phe Ser Ala Ala Glu Val Val Gln Asp Ser Ala Asp Arg
1410 1415 1420
Phe Phe Leu Ser Phe Ala Gln Leu Cys Gly His Ser Cys Ala Leu Glu
1425 1430 1435 1440
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1445 1450 1455
Pro Tyr Lys Ile Cys Phe Arg Phe Ile Ser Glu Asn Val Val Ser Ser
1460 1465 1470
Met Thr Ile Leu Phe Asn Ser Asn Thr Leu Ser Cys Phe Leu Phe Asn
1475 1480 1485
Gly Glu Asn Ile Val Pro Phe Ser Asp Leu Cys Ser Pro Asp His Asp
1490 1495 1500
Glu Gly Arg Lys Tyr Phe Leu Val Ile Phe Leu Ser Lys Phe Phe Gln
1505 1510 1515 1520
Thr Arg His Lys Tyr Asn Tyr Arg Pro Arg Leu Ile Leu Leu Met His
1525 1530 1535
Arg Phe Ser Leu Pro Phe Pro Leu Cys Tyr Gly Tyr Arg Cys Tyr Trp
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1555 1560 1565

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<210> 30  
 <211> 1574  
 <212> PRT  
 <213> Musa acuminata

<220>  
 <221> VARIANT

&lt;222&gt; 158, 271, 1179, 1317

&lt;223&gt; Xaa = Any Amino Acid

&lt;400&gt; 30

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20      25      30
Gly Leu Thr Trp Phe His Ser Glu Lys Phe Glu Arg Val His Lys Asn
35      40      45
Ile Asp Phe Gly Phe Phe His Ser Val Gly Ala Phe Met Ser Asp Leu
50      55      60
Lys Ser Pro Pro Asn Ile Lys Ser Arg Ile Thr Asn Asn Val Ile Glu
65      70      75      80
Phe Ile Phe Val Cys Thr Lys Gln Gly Ile His Ser Leu Cys Val Ser
85      90      95
Lys Asn Ile Leu Leu Arg Phe Ile Pro Phe Ala His Arg Lys Arg Lys
100     105     110
Phe Leu Lys Ser Ile Phe Asp Asn Arg Pro Lys Leu Glu Ile His Gly
115     120     125
Asn Glu Glu Asp Pro His Met Ser Phe Pro Ile His Val Ile Arg Leu
130     135     140
Ile Lys His Arg Trp Met Cys Asn Glu Met Thr Leu Met Xaa Tyr Leu
145     150     155     160
Ser Trp Val Leu Asn Gln Ile Glu Ala Leu Leu Tyr Gln Leu Leu Gly
165     170     175
Ser Glu Trp His Glu Arg Gly Gly Val Asn Cys Ser Gly Leu Lys Leu
180     185     190
Ile Ser Leu Lys Met Asn Ser Ile Arg Glu Asp Phe Val Leu Ile Val
195     200     205
Thr Val Asp Glu Asn Gln Lys Leu Thr Val Val Ile Thr Ile Ser Gly
210     215     220
Lys Glu Leu Thr His Ser Arg Asn Ile Pro Ile Ser Gly Ser Val Lys
225     230     235     240
Met Thr Tyr Ile His Leu Ser Leu Leu Arg Arg Gly Ser Gln Leu Pro
245     250     255
Leu Ala Asn His Phe Glu Gly Glu Gly Gln Ile Pro Leu Leu Xaa Pro
260     265     270
Phe Thr Met Val His Thr Leu Thr Asn Phe Gln Arg Glu Arg Arg Arg
275     280     285
Thr Cys Lys Gln Leu Lys Thr Arg Leu Ala Lys Asp Phe Ala Lys Ala
290     295     300
Phe Phe Leu Asn Leu Leu Leu Lys Ser Cys Ile Leu Cys Glu Leu
305     310     315     320
Arg Gly Ile Tyr Arg Pro Gln Glu Asp Leu Asn Leu Gly Ser Lys Phe
325     330     335
Arg Met Leu Leu Gly Ser Arg Gly Cys Arg Cys His Arg Leu Ser Val
340     345     350
Phe Asp Thr Gly Gln Cys Thr Ser Gly Ala Thr Ala Gly Pro Leu Gly
355     360     365
Cys Trp Ala Val Pro Pro Pro Arg Leu Phe Gln Leu Thr Gly Trp Ile
370     375     380
Pro Asn Leu Thr Gln Thr Ser Pro Asn Ser Gly Pro Ile Asp Pro Pro
385     390     395     400
Asp Tyr Arg Ile Asn Pro Ser Pro Leu Tyr Ala Asn Tyr Ala Thr Glu
405     410     415
Asn Ile Val Leu Ser Lys Phe Leu Thr Gly Lys Arg Arg Val Phe Phe
420     425     430
Arg Arg Ser Phe Gly Arg Leu Leu Ile Tyr Leu Trp Ile Ser Ser Ser

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435										440										445										
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450							455				460																			
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465						470				475					480															
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				485					490					495																
Ile	Ser	Asn	Glu	Thr	Ser	Asp	Ser	Leu	Asn	Val	His	Arg	Thr	Leu	Arg															
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Ala	Cys	Phe	Ile	Phe	Ser	Gly	Tyr	His	Ser	Ser	Tyr	Ile	Leu	Asn	Ser															
		515					520					525																		
Ile	Ile	Trp	Ile	Arg	Leu	Ile	Asn	Pro	Ser	Ile	Asp	Phe	Ile	Ile	Lys															
	530					535					540																			
Ile	Arg	His	Ser	Thr	Asn	Ile	Arg	Thr	Gln	Pro	Ile	Arg	Leu	Leu	Arg															
545					550				555						560															
Asp	Tyr	Leu	Leu	Ser	Val	Arg	Glu	Val	Ser	Glu	Ser	Ser	Arg	Ser	Cys															
				565			570							575																
His	Leu	Leu	Ala	Glu	His	Val	Ser	Leu	Ile	Gln	Ile	Gln	Ser	Ser	Gln															
			580				585						590																	
Leu	Phe	Pro	Thr	Arg	Leu	Phe	Phe	Tyr	Tyr	Phe	Lys	Asn	Ser	Asn	Gln															
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      565                      570                      575
Arg Gly Thr Asp Leu Leu Leu Pro Pro Pro Arg Arg Gly Ser Asn Leu
      580                      585                      590
Gly Leu His Leu Ile Thr Leu Pro Asn Ala Phe Ser Val Phe Val Ser
      595                      600                      605
Ser Leu Gln Leu Arg Arg Arg Gly Asp Arg Cys Arg Arg Ser Cys Arg
      610                      615                      620
Ala Arg Gln Val Gln Val Arg Arg Arg Leu Arg Leu His Arg Leu Gln
625      630                      635                      640
Val Trp Gln Leu Arg Ser Thr Cys Val Thr Thr Thr Lys Lys Phe Ala
      645                      650                      655
Met His Lys Lys Gln Lys Asn Lys Lys Lys Lys Gly Arg Arg Arg Arg
      660                      665                      670
Cys Tyr Val Leu Phe Gly Gln Ala Asp Arg Leu Asp Gly Ile Thr Gln
      675                      680                      685
Tyr His Leu Cys Tyr Leu Cys Pro Val Leu Gln Leu Ser Tyr Leu Ser
      690                      695                      700
Ser Met Lys Tyr Tyr Tyr Ser Gly Cys Val Ile His Ile Cys Cys Cys
705      710                      715                      720
Cys Cys Cys Phe Leu Phe His Gln Ser Thr Gln Arg Ile Asp Cys Thr
      725                      730                      735
Val Arg Pro Asn Phe Leu Thr Asp Met Leu Ala Gln Leu Arg Met Asn
      740                      745                      750
Ser Asn Gln Thr Ser Leu
      755

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<210> 35  
 <211> 758  
 <212> PRT  
 <213> Musa acuminata

<220>  
 <221> VARIANT  
 <222> 541  
 <223> Xaa = Any Amino Acid

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<400> 35
His Trp Tyr Gly Ala Pro Leu Glu Val Asp Gly Ile Asp Lys Leu Ser
 1      5      10      15
Leu Leu Ser Ile Ser Leu Ser Leu Ser Leu Ser Leu Ser Leu Cys Met
      20      25      30
Ser Leu Asn Met Val Val Met Leu Asn Cys Tyr Val Tyr Leu Gly Gln
      35      40      45
Thr Val Ser Ile Phe Glu Gln Ile Asn Leu Ala Ile Met Phe Phe Leu
      50      55      60
Leu Lys Ala Leu Gln Asp Glu Gly Leu Lys Ser His Arg Thr Pro Thr
65      70      75      80
Gly Ser Tyr Gly Leu Leu His Ser Glu Gln Pro Trp Asp Val Arg Ser
      85      90      95

```

Thr	Gln	Arg	Arg	Gly	Lys	Pro	Ala	Thr	Leu	Gly	Cys	Cys	Cys	Ser	Ser		
			100					105					110				
Lys	Asp	Arg	Lys	Val	Arg	Arg	Gln	Arg	Ser	Thr	Phe	Ser	Ser	Met	Met		
		115					120					125					
Thr	Thr	Thr	Thr	Cys	Ser	Cys	Asn	Ile	Arg	Pro	Leu	Pro	Ser	Gly	Asn		
		130				135					140						
Lys	Trp	Val	Cys	Ser	Cys	Thr	Ile	Ser	Arg	Arg	Asn	Leu	Lys	Ala	Leu		
145					150					155					160		
Gln	Ile	Ala	Val	Ser	Leu	Ser	Leu	Tyr	Thr	Phe	Leu	Leu	Leu	His	Asn		
				165					170					175			
Cys	Met	Leu	Arg	His	Phe	Cys	Met	Asp	Pro	Asn	Met	Arg	Ser	Ile	Ile		
			180					185				190					
Glu	Val	Met	Gly	Arg	Ile	Tyr	Ile	Ile	Ile	Ile	Ile	Ile	Ile	Ser	Met		
		195					200					205					
Gly	Leu	Asp	Leu	Ile	Arg	Pro	Lys	Thr	Ser	Phe	Lys	Ile	Gln	Pro	Gln		
		210				215					220						
Tyr	Trp	Leu	Asp	Leu	Leu	His	Leu	Gln	Glu	Lys	Tyr	Asn	Lys	Asn	Asn		
225					230					235					240		
Lys	Asn	Leu	Gly	Cys	Thr	Leu	Asn	Phe	Gly	His	Tyr	Glu	Arg	Ile	Met		
				245					250					255			
Asp	Lys	Tyr	Asn	Lys	Lys	Ile	Ile	Ile	Ile	Tyr	Ser	Leu	Arg	Phe	Thr		
			260					265					270				
Phe	Tyr	Pro	Pro	Asn	Leu	Thr	Ser	Ala	Ser	Asn	Phe	His	Ile	Leu	Gly		
		275					280					285					
Ser	Lys	Lys	Ser	Leu	Pro	Leu	Thr	Asp	Glu	Ile	Phe	Leu	Leu	Ile	Arg		
	290					295				300							
Gly	Arg	Ile	Tyr	Asn	Ile	Tyr	Ile	Tyr	Ile	Tyr	Leu	Phe	Ile	Arg	Phe		
305					310					315					320		
Pro	Phe	Leu	Ser	Pro	Glu	Tyr	Glu	Ser	Thr	Ala	Ile	Ser	Ala	Lys	Thr		
				325					330					335			
His	Gln	Leu	Phe	Thr	Val	Asn	Ala	His	Ile	Lys	Val	Glu	Ile	Thr	Phe		
			340					345					350				
Lys	Phe	Leu	Glu	Ile	Ser	Asn	Lys	Ile	Tyr	Ser	Tyr	Leu	Leu	Gln	Cys		
		355					360					365					
Ser	Gly	Asp	Gly	Arg	Met	Arg	Val	Ser	Ala	Ala	Cys	Asp	Leu	Cys	Gly		
	370					375					380						
Gly	Asp	Glu	Thr	Lys	Thr	Arg	Thr	Ala	Asp	Asp	Thr	Lys	Ser	Ser	Pro		
385					390					395					400		
Pro	Pro	Pro	Arg	Thr	Ser	Gln	Ile	Pro	Asp	Thr	Ala	Tyr	Pro	Gly	Gly		
				405					410					415			
Val	Trp	Thr	Ala	Gln	Thr	Asn	Glu	Met	Pro	Ile	Pro	Pro	Leu	Ser	Phe		
			420					425					430				
Phe	Leu	Phe	Ala	Cys	Val	Arg	Gly	Ala	Pro	Ile	Asn	Lys	His	Glu	Thr		
		435					440				445						
Ser	Pro	Phe	Ser	Leu	Gln	Glu	His	Thr	Thr	Pro	Phe	Thr	His	Tyr	Ile		
		450				455				460							
Leu	Cys	Phe	Phe	Glu	Pro	Phe	Arg	Leu	Pro	Ser	Ser	Ser	Asn	His	Val		
465					470					475					480		
Asp	Leu	Arg	Gln	Leu	Arg	Leu	Arg	Gln	Glu	Pro	Val	Arg	Val	Ser	His		
				485					490					495			
Pro	Pro	Ser	Leu	His	Leu	Phe	Phe	Phe	Phe	Phe	Phe	Phe	Phe	Pro	Arg		
			500					505					510				
Pro	Val	Cys	Val	Val	Asp	Ser	Ser	His	Ile	Ala	Arg	Gln	Asn	Ser	Glu		
		515					520					525					
Leu	Tyr	Gly	Thr	Ser	Ala	Ile	Leu	Tyr	Val	Tyr	Val	Xaa	Gly	Gln	Arg		
		530				535					540						
Trp	Leu	Lys	Asn	Leu	Val	Leu	Pro	Leu	Gln	Glu	Glu	Arg	Lys	Gln	Leu		
545					550					555					560		
Arg	Tyr	Arg	Tyr	Cys	Asp	Arg	Glu	Glu	Val	Leu	Ile	Ser	Phe	Phe	Ser		

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                    565                    570                    575
Leu Leu Leu Val Glu Asp Asp Gln Thr Asn Asp Tyr Thr Leu Leu Pro
                    580                    585                    590
Tyr Leu Met Leu Phe Pro Val Ser Phe Arg Leu Phe Ser Tyr Val Asp
                    595                    600                    605
Glu Val Ile Val Ala Ala Glu Ala Ala Glu His Asp Gly Lys Cys Lys
                    610                    615                    620
Cys Gly Ala Ala Cys Ala Cys Thr Asp Cys Lys Cys Gly Asn Glu Ala
625                    630                    635                    640
Leu Val Ser Leu Pro Leu Asn Asn Lys Ser Leu Gln Cys Ile Lys Asn
                    645                    650                    655
Lys Arg Thr Lys Lys Lys Lys Glu Glu Glu Glu Gly Val Ala Met Tyr
                    660                    665                    670
Ser Asn Asn Ser Gly Arg Leu Ile Gly Cys Lys Met Gly Arg Ser Ile
                    675                    680                    685
Ile Cys Val Ile Ser Val Leu Cys Tyr Asn Ser Pro Ile Tyr Pro Ser
690                    695                    700
Gln Asn Ile Ile Ser Ile Asn Leu Val Val Ser Phe Ile Tyr Ala Ala
705                    710                    715                    720
Ala Ala Ala Ala Ser Ser Phe Thr Asn Gln Pro Lys Gly Ser Ile Ala
                    725                    730                    735
Leu Gly Pro Thr Ser Ser Pro Ile Cys Ser Leu Ser Tyr Asp Glu Thr
                    740                    745                    750
Ala Thr Lys Arg Val Cys
                    755

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<210> 36  
 <211> 762  
 <212> PRT  
 <213> Musa acuminata

<220>  
 <221> VARIANT  
 <222> 546  
 <223> Xaa = Any Amino Acid

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<400> 36
Leu Thr Gly Thr Gly Pro Pro Ser Arg Ser Thr Val Ser Ile Ser Phe
1                    5                    10                    15
Asp Leu Phe Ser Gln Ser Leu Ser Leu Ser Leu Ser Leu Ser Leu Ser
20                    25                    30
Val Cys Leu Ile Trp Leu Cys Ile Ala Met Phe Ile Leu Ala Lys Leu
35                    40                    45
Cys Pro Ser Leu Ser Arg Ile Trp Arg Cys Ser Phe Tyr Lys His Cys
50                    55                    60
Arg Met Arg Ala Asn His Ile Gly Arg Pro Leu Gly His Asp Asp Met
65                    70                    75                    80
Asp Ser Ser Thr Ala Ser Ser His Gly Met Asp Pro His Ser Ser Val
85                    90                    95
Asp Lys Gly Ser Pro Gln His Ala Val Val Val Pro Val Lys Ile Glu
100                    105                    110
Arg Ser Gly Asp Ser Asp Asp Arg Leu Phe Arg Ala Gln Arg Arg Pro
115                    120                    125
Ala Pro Ala Ile Ser Val Pro Tyr Arg Arg Val Gly Ile Asn Gly Phe
130                    135                    140
Val Val Ala Leu Phe Leu Ala Gly Ile Asn Lys Pro Cys Lys Leu Leu
145                    150                    155                    160
Phe Leu Phe Pro Tyr Ile Lys Pro Ser Ser Cys Tyr Ile Lys Ile Ala

```



Ala	Thr	Glu	Lys	His	Leu	Cys	His	Tyr	His	Ile	Lys	Val	Cys	Asn	Ala		
				645					650					655			
Lys	Thr	Lys	Glu	Gln	Lys	Lys	Lys	Arg	Lys	Lys	Lys	Lys	Val	Trp	Leu		
			660					665					670				
Cys	Thr	Leu	Ile	Ile	Arg	Ala	Gly	Val	Val	Arg	Trp	Asp	Asn	Ala	Val		
		675					680					685					
Ser	Ser	Val	Leu	Ser	Leu	Ser	Cys	Val	Thr	Thr	Leu	Leu	Ser	Ile	Leu		
		690				695					700						
Val	Asn	Glu	Ile	Leu	Leu	Val	Leu	Ile	Trp	Leu	Cys	His	Ser	Tyr	Met		
705					710					715					720		
Leu	Leu	Leu	Leu	Leu	Pro	Leu	Ser	Pro	Ile	Asn	Pro	Lys	Asp	Arg			
				725				730					735				
Leu	His	Cys	Lys	Ala	Gln	Leu	Pro	His	Arg	Tyr	Ala	Arg	Ser	Val	Thr		
			740					745					750				
Met	Asn	Glu	Gln	Gln	Pro	Asn	Glu	Ser	Ala								
		755					760										

&lt;210&gt; 37

&lt;211&gt; 1880

&lt;212&gt; DNA

&lt;213&gt; Musa acuminata

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;222&gt; 1721, 1782, 1788, 1799

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 37

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gctgaattgc	tatgtttatc	ttggccaaac	tgtgtccatc	tttgagcaga	taaatctggc	180
gataatgttc	tttttactga	aagcactgca	ggtgaggggc	ctgaaatcac	atcggacgcc	240
cactgggtca	tgatgatatg	gactcctcca	cagcgagcag	ccatgggatg	tgagatccac	300
atagcagcgt	agataaggga	agcccgaac	actaggctgt	tggtgttcca	gtaaagatcg	360
aaaggctcagg	cgacagtgc	gatcgacttt	ttcgagcatg	atgacaacga	cgacctgctc	420
ctgcaatata	cgtcccctac	cgtagagtgg	gaataaatgg	gtttgtagtt	gcactatttc	480
tcgcaggaat	taattgaaag	ccctgcaaat	tgctgtttct	ctttccttat	attaaacctt	540
cctcctgtta	cattaaaaat	gcatgttaag	acatttctgt	atggatccga	acatgagatc	600
tatcattgaa	gtaattgggt	ggatttacat	tatcatcatc	atcatcatct	ccatgggttt	660
ggatctaatt	agaccgaaaa	cctcatttaa	aatccaaccc	caatattggc	ttgacttgct	720
ccatctccaa	gaaaaataca	acaagaacaa	caaaaattta	ggatgcacat	tgaattgatt	780
tggtcactat	gagagaatca	tggaataaaa	atattaaaa	aaaaaataaa	tcataatcat	840
ctactcactc	taacgattca	cattctatcc	accaaatttg	acatcggctt	ctaattaatt	900
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tcgttaggga	aggatcta	ataatatata	tatatatata	tatttattta	ttagattcta	1020
accatttctc	tcaccagaat	atgaatcgac	ggccatatct	gcaaaaaccc	accaattggt	1080
cacagtaaac	gctcattgaa	ttaagggtcga	aattactttt	aaatttctag	agatttccaa	1140
taaaatatac	tcgtatcttt	tacagtgatg	atgctccgga	tgataagatg	gaaggatgcg	1200
tgtgtcagcc	gcctgcgatc	tctgtggcgg	ggacgagacg	aagacaagga	cgtgagcgga	1260
cgataccaag	tcttctcctc	ccccaccacg	cacgtctcag	attcccgata	cggcctatcc	1320
cggtggcggtg	tggactgcac	agacgaacga	gtaaatgcc	atccccctc	tttcattctt	1380
tctctttg	tgtgtgagag	gagcgctat	aaataagcac	gaaacaagcc	ccttttctct	1440
ccaagaacac	accacaccat	tcacacacta	catectctgc	ttcttcgagc	cttttcgcct	1500
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gcgtgtaagt	catcctccat	ccctccacct	cttcttcttc	ttcttcttct	tcttcttcta	1620
acctcgcccc	gtttgtgttt	gatgagtcca	ctcttcccac	atcgctcgtc	aaaactcaga	1680
gctttattag	ggaacatcag	caatactata	tgtatatgta	naagggtcaac	gttggctgaa	1740
gaacttggtt	ttgcctttgc	aggaagaaa	gaaacagcta	cngtattcnat	attggtgana	1800

ccgagaagag gtactgatta gcttcttctc cctcctcctc gtcgaggatg atcaaactaa 1860  
 ttaggattac accttattac 1880

<210> 38  
 <211> 1878  
 <212> DNA  
 <213> Musa acuminata

<220>  
 <221> misc\_feature  
 <222> 1720, 1768, 1781, 1787, 1798, 1807, 1820, 1845, 1869  
 <223> n = A,T,C or G

<400> 38  
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 ttagagagag agagagagag agagagagag agagacatac tgaaatttat accaaccatta 120  
 cgacttaacg atacaaatag aaccggtttg acacaggtag aaactcgtct atttagaccg 180  
 ctattacaag aaaaatgact ttcgtgacgt cctactcccg gacttttagtg tagcctgcgg 240  
 gtgacccagt actactatac ctgaggaggt gtcgctcgtc ggtaccctac actctagggtg 300  
 tatcgtcgca tctattccct tcgggcgttg tgatccgaca acaacaaggt catttctagc 360  
 tttccagtcg gctgtcactg ctagctgaaa aagctcgtac tactgttgct gctggacgag 420  
 gacgttatag gcaggggatg gcctctcacc cttatttacc caaacatcaa cgtgataaag 480  
 agcgtccctta attaactttc gggacgttta acgacaaaga gaaaggaata taatttggaa 540  
 ggaggacaat gtaattttta cgtacaattc tgtaaagaca tacctaggct tgtactctag 600  
 atagtaactt cattacccat cctaaatgta atagtagtag tagtagtaga ggtacccaaa 660  
 cctagattaa tctggccttt ggagtaaatt tttttaaatc ctacgtgtaa cttaactaaa 720  
 gtagagggttc tttttatgtt gttcttgttg ataattttat tttttattta gtattagtag 840  
 ccagtgtatc tctcttagtg cctaattttt ataattttat tttttattta gtattagtag 840  
 atgagtgtga ttgctaagtg taagataggt ggtttaaact gtagccgaag attaatataa 900  
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 gcaatccctt cctagattat attatatata tatatatata taaataaata atctaagatt 1020  
 ggtaaagaga gtggtcttat acttagctgc cggtagagac gtttttgggt ggtaacaag 1080  
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 cacagtcggc ggacgctaga gacaccgccc ctgctctgct tctgttcctg cactcgccctg 1260  
 ctatggttca gaagaggagg ggggtggtgcg tgcagagtct aagggtatg ccgtagagg 1320  
 ccaccgcaca cctgacgtgt ctgcttgctc atttacgggt aggggggaga aagtaagaaa 1380  
 gagaaacgca cacactctcc tcgcggatat ttattcgtgc tttgttcggg gaaaagagag 1440  
 gttcttgtgt ggtgtggtaa gtgtgtgatg taggagacga agaagctcgg aaaagcggaa 1500  
 ggaaggagca gattggtaca gctggacgcc gttgacgctg acgcaactgt tctcggtcac 1560  
 gcacattcag taggaggtag ggaggtggag aagaagaaga agaagaagaa gaagaagatt 1620  
 ggagcggggc aaacacaaac tactcagctg agaagggtgt agcagagcagt tttgagtcctc 1680  
 gaaataatcc cttgtagtcg ttatgatata catatacatn ttccagttgc aaccgacttc 1740  
 ttgaacccaa acggaaacgt ccttcttncc tttgtcgatg ncatagntat aacaactntg 1800  
 gcttttntcc atgactaatn gaagaagagg gaggaggagc agctntacta gtttgattaa 1860  
 tcctaattgng gaataatg 1878

<210> 39  
 <211> 597  
 <212> PRT  
 <213> Musa acuminata

<220>  
 <221> VARIANT  
 <222> 546, 562, 572, 575, 579, 588, 594  
 <223> Xaa = Any Amino Acid

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 Ser Leu Val Arg Gly Pro Pro Arg Gly Arg Arg Tyr Arg Ala Leu Ile

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Ser Ser Leu Asn Leu Ser Leu Ser Leu Ser Leu Ser Leu Ser Leu Tyr			
	20	25	30
Phe Lys Tyr Gly Cys Asn Ala Glu Leu Leu Cys Leu Ser Trp Pro Asn			
	35	40	45
Cys Val His Leu Ala Asp Lys Ser Gly Asp Asn Val Leu Phe Thr Glu			
	50	55	60
Ser Thr Ala Gly Gly Pro Glu Ile Thr Ser Asp Ala His Trp Val Met			
65	70	75	80
Met Ile Trp Thr Pro Gln Arg Ala Ala Met Gly Cys Glu Ile His			
	85	90	95
Ala Ala Ile Arg Glu Ala Arg Asn Thr Arg Leu Leu Leu Phe Gln Arg			
	100	105	110
Ser Lys Gly Gln Ala Thr Val Thr Ile Asp Phe Phe Glu His Asp Asp			
	115	120	125
Asn Asp Asp Leu Leu Leu Gln Tyr Pro Ser Pro Thr Val Glu Trp Glu			
	130	135	140
Met Gly Leu Leu His Tyr Phe Ser Gln Glu Leu Ile Glu Ser Pro Ala			
145	150	155	160
Asn Cys Cys Phe Ser Phe Leu Ile Leu Asn Leu Pro Pro Val Thr Leu			
	165	170	175
Lys Leu His Val Lys Thr Phe Leu Tyr Gly Ser Glu His Glu Ile Tyr			
	180	185	190
His Ser Asn Gly Asp Leu His Tyr His His His His His Leu His Gly			
	195	200	205
Phe Gly Ser Asn Thr Glu Asn Leu Ile Asn Pro Thr Ile Leu Ala Leu			
	210	215	220
Ala Pro Ser Pro Arg Lys Ile Gln Gln Glu Gln Gln Lys Phe Arg Met			
225	230	235	240
His Ile Glu Leu Ile Trp Ser Leu Glu Asn His Gly Leu Lys Ile Leu			
	245	250	255
Lys Lys Ile Asn His Asn His Leu Leu Thr Leu Thr Ile His Ile Leu			
	260	265	270
Ser Thr Lys Phe Asp Ile Gly Phe Leu Ile Ser Tyr Ile Arg Phe Lys			
	275	280	285
Ile Ser Pro Phe Asp Arg Ile Asn Ile Ser Phe Asn Ser Leu Gly Lys			
	290	295	300
Asp Leu Ile Tyr Ile Tyr Ile Tyr Ile Phe Ile Tyr Ile Leu Thr Ile			
305	310	315	320
Ser Leu Thr Arg Ile Ile Asp Gly His Ile Cys Lys Asn Pro Pro Ile			
	325	330	335
Val His Ser Lys Arg Ser Leu Asn Gly Arg Asn Tyr Phe Ile Ser Arg			
	340	345	350
Asp Phe Gln Asn Ile Leu Val Ser Phe Thr Val Met Met Leu Arg Met			
	355	360	365
Ile Arg Trp Lys Asp Ala Cys Val Ser Arg Leu Arg Ser Leu Trp Arg			
	370	375	380
Gly Arg Asp Glu Asp Lys Asp Val Ser Gly Arg Tyr Gln Val Phe Ser			
385	390	395	400
Ser Pro Thr Thr His Val Ser Asp Ser Arg Tyr Gly Leu Ser Arg Trp			
	405	410	415
Arg Val Asp Cys Thr Asp Glu Arg Val Asn Ala His Pro Pro Ser Phe			
	420	425	430
Ile Leu Ser Leu Cys Val Cys Glu Arg Ser Ala Tyr Lys Ala Arg Asn			
	435	440	445
Lys Pro Leu Phe Ser Pro Arg Thr His His Thr Ile His Thr Leu His			
	450	455	460
Pro Leu Leu Leu Arg Ala Phe Ser Pro Ser Phe Leu Val Pro Cys Arg			
465	470	475	480

Pro Ala Ala Thr Ala Thr Ala Leu Thr Arg Ala Ser Ala Cys Lys Ser  
                             485                            490                            495  
 Ser Ser Ile Pro Pro Pro Leu Leu Leu Leu Leu Leu Leu Leu Leu  
                             500                            505                            510  
 Thr Ser Pro Arg Leu Cys Leu Met Ser Arg Leu Phe Pro His Arg Ser  
                             515                            520                            525  
 Ser Lys Leu Arg Ala Leu Leu Gly Asn Ile Ser Asn Thr Ile Cys Ile  
                             530                            535                            540  
 Cys Xaa Arg Ser Thr Leu Ala Glu Glu Leu Gly Phe Ala Phe Ala Gly  
                             545                            550                            555                            560  
 Arg Xaa Glu Thr Ala Thr Val Ser Ile Leu Leu Xaa Pro Lys Xaa Gly  
                             565                            570                            575  
 Thr Asp Xaa Leu Leu Leu Pro Pro Pro Arg Arg Xaa Ser Asn Leu Gly  
                             580                            585                            590  
 Leu Xaa Leu Ile Thr  
                             595

<210> 40  
 <211> 590  
 <212> PRT  
 <213> Musa acuminata

<220>  
 <221> VARIANT  
 <222> 540, 556, 560, 562, 565, 568, 572, 580, 588  
 <223> Xaa = Any Amino Acid

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                             20                            25                            30  
 Ser Leu Asn Met Val Val Met Leu Asn Cys Tyr Val Tyr Leu Gly Gln  
                             35                            40                            45  
 Thr Val Ser Ile Phe Glu Gln Ile Asn Leu Ala Ile Met Phe Phe Leu  
                             50                            55                            60  
 Leu Lys Ala Leu Gln Asp Glu Gly Leu Lys Ser His Arg Thr Pro Thr  
                             65                            70                            75                            80  
 Gly Ser Tyr Gly Leu Leu His Ser Glu Gln Pro Trp Asp Val Arg Ser  
                             85                            90                            95  
 Thr Gln Arg Arg Gly Lys Pro Ala Thr Leu Gly Cys Cys Cys Ser Ser  
                             100                            105                            110  
 Lys Asp Arg Lys Val Arg Arg Gln Arg Ser Thr Phe Ser Ser Met Met  
                             115                            120                            125  
 Thr Thr Thr Thr Cys Ser Cys Asn Ile Arg Pro Leu Pro Ser Gly Asn  
                             130                            135                            140  
 Lys Trp Val Cys Ser Cys Thr Ile Ser Arg Arg Asn Leu Lys Ala Leu  
                             145                            150                            155                            160  
 Gln Ile Ala Val Ser Leu Ser Leu Tyr Thr Phe Leu Leu Leu His Asn  
                             165                            170                            175  
 Cys Met Leu Arg His Phe Cys Met Asp Pro Asn Met Arg Ser Ile Ile  
                             180                            185                            190  
 Glu Val Met Gly Arg Ile Tyr Ile Ile Ile Ile Ile Ile Ile Ser Met  
                             195                            200                            205  
 Gly Leu Asp Leu Ile Arg Pro Lys Thr Ser Phe Lys Ile Gln Pro Tyr  
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 Trp Leu Asp Leu Leu His Leu Gln Glu Lys Tyr Asn Lys Asn Asn Lys  
                             225                            230                            235                            240



Asn Leu Gly Cys Thr Leu Asn Phe Gly His Tyr Glu Arg Ile Asp Lys  
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 Tyr Asn Lys Lys Ile Ile Ile Ile Tyr Ser Leu Arg Phe Thr Phe Tyr  
 260 265 270  
 Pro Pro Asn Leu Thr Ser Ala Ser Asn Phe His Ile Leu Gly Ser Lys  
 275 280 285  
 Lys Ser Leu Pro Leu Thr Asp Glu Ile Phe Leu Leu Ile Arg Gly Arg  
 290 295 300  
 Ile Tyr Asn Ile Tyr Ile Tyr Ile Tyr Leu Phe Ile Arg Phe Pro Phe  
 305 310 315 320  
 Leu Ser Pro Glu Tyr Glu Ser Thr Ala Ile Ser Ala Lys Thr His Gln  
 325 330 335  
 Leu Phe Thr Val Asn Ala His Ile Lys Val Glu Ile Thr Phe Lys Phe  
 340 345 350  
 Leu Glu Ile Ser Asn Lys Ile Tyr Ser Tyr Leu Leu Gln Cys Ser Gly  
 355 360 365  
 Asp Gly Arg Met Arg Val Ser Ala Ala Cys Asp Leu Cys Gly Gly Asp  
 370 375 380  
 Glu Thr Lys Thr Arg Thr Ala Asp Asp Thr Lys Ser Ser Pro Pro Pro  
 385 390 395 400  
 Pro Arg Thr Ser Gln Ile Pro Asp Thr Ala Tyr Pro Gly Gly Val Trp  
 405 410 415  
 Thr Ala Gln Thr Asn Glu Met Pro Ile Pro Pro Leu Ser Phe Phe Leu  
 420 425 430  
 Phe Ala Cys Val Arg Gly Ala Pro Ile Asn Lys His Glu Thr Ser Pro  
 435 440 445  
 Phe Ser Leu Gln Glu His Thr Thr Pro Phe Thr His Tyr Ile Leu Cys  
 450 455 460  
 Phe Phe Glu Pro Phe Arg Leu Pro Ser Ser Ser Asn His Val Asp Leu  
 465 470 475 480  
 Arg Gln Leu Arg Leu Arg Gln Glu Pro Val Arg Val Ser His Pro Pro  
 485 490 495  
 Ser Leu His Leu Phe Phe Phe Phe Phe Phe Phe Pro Arg Pro  
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 Tyr Gly Thr Ser Ala Ile Leu Tyr Val Tyr Val Xaa Gly Gln Arg Trp  
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 545 550 555 560  
 Tyr Xaa Tyr Cys Xaa Arg Lys Xaa Val Leu Ile Xaa Phe Phe Ser Leu  
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 Pro Ser Leu Ser Arg Ile Trp Arg Cys Ser Phe Tyr Lys His Cys Arg

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Lys Gly Ser Pro Gln His Ala Val Val Val Pro Val Lys Ile Glu Arg
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Ser Gly Asp Ser Asp Asp Arg Leu Phe Arg Ala Gln Arg Arg Pro Ala
      115      120      125
Pro Ala Ile Ser Val Pro Tyr Arg Arg Val Gly Ile Asn Gly Phe Val
      130      135      140
Val Ala Leu Phe Leu Ala Gly Ile Asn Lys Pro Cys Lys Leu Leu Phe
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Leu Phe Pro Tyr Ile Lys Pro Ser Ser Cys Tyr Ile Lys Ile Ala Cys
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Asp Ile Ser Val Ser Trp Ile Arg Thr Asp Leu Ser Leu Lys Trp Val
      180      185      190
Gly Phe Thr Leu Ser Ser Ser Ser Ser Ser Pro Trp Val Trp Ile Leu
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Lys Asn Lys Ser Ser Ser Thr His Ser Asn Asp Ser His Ser Ile His
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Gln Ile His Arg Leu Leu Ile Asn Phe Ile Tyr Val Leu Lys Asn Leu
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Ser Leu Gln Met Asn Lys Tyr Phe Phe Phe Val Arg Glu Gly Ser Asn
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Ile Ile Tyr Ile Tyr Ile Tyr Leu Arg Ser Lys Leu Leu Leu Asn Phe
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Asp Asp Lys Met Glu Gly Cys Val Cys Gln Pro Pro Ala Ile Ser Val
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Val Ala Cys Gly Leu His Arg Arg Thr Ser Lys Cys Pro Ser Pro Leu
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Phe His Ser Phe Ser Leu Arg Val Glu Glu Arg Leu Ile Ser Thr Lys
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&lt;400&gt; 43

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17

&lt;210&gt; 44

&lt;211&gt; 2156

&lt;212&gt; DNA

&lt;213&gt; Musa acuminata

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&lt;222&gt; 879

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 44

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